



MURRAY
STATE UNIVERSITY

**College of Education
and Human Services**

**EARTH SCIENCE EDUCATION CERTIFICATION
(GRADES 8-12)
BACHELORS OF SCIENCE
PROGRAM SUBMISSION
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16 KAR 2:010
16 KAR 5:020
16 KAR 5:040
16 KAR 6:010
16 KAR 7:010

PGM Codes: **13 and 3888**

The content courses in this program are used for determining the equivalent of a major or area, addressing and assessing SPA and Kentucky Academic Standards through a transcript review for entrance into our Alternative Certification Option 6 Program. PGM Code: 1847

Executive Summary

Theme of the Unit

The mission of the College of Education and Human Services is the preparation of leaders for successful careers that positively impact communities as advocates and practitioners, through student-centered, authentic, and engaging academic programs. The college envisions being recognized for producing graduates who foster excellence in their communities. The college's education programs support that mission and vision by ensuring candidates exemplify the knowledge, skills, dispositions, leadership qualities, and decision-making skills necessary to serve as effective educators in their communities. The goal of the college's educator preparation program is to produce candidates who demonstrate the characteristics of a Murray State University graduate, the proficiencies delineated by Kentucky Teacher Standards and the knowledge required by learned societies. "Educator as a reflective decision-maker" is the unit's theme. Undergraduate candidates demonstrate professional dispositions throughout their course work, field experiences, and student teaching. Murray State University candidates will become educators who demonstrate these dispositions: inclusive, responsible, enthusiastic, caring, confident, and ethical. Graduate candidates exhibit the same dispositions while developing their capacities as teacher leaders who foster excellence in their classrooms, schools, districts, and communities.

Unique Features

Murray State University (MSU) has long recognized teacher preparation as a major institutional focus. Established in 1922 by the Kentucky General Assembly as Murray State Normal School, the institution was renamed Murray State College in 1948 and achieved university status in 1966 as Murray State University. This tax-supported residential comprehensive university is composed of the Hutson School of Agriculture, School of Nursing and Health Professions, and four academic colleges: College of Education and Human Services, Arthur J. Bauernfeind College of Business, College of Humanities and Fine Arts, and Jesse D. Jones College of Science, Engineering and Technology. The university fosters an exciting and challenging learning environment by emphasizing student-centered learning and educational experiences; preparing graduates to succeed in a culturally diverse, technologically oriented society; developing collaborative relationships with alumni and community constituents; promoting international education; and encouraging academic outreach.

MSU serves an 18-county region in the heart of the Jackson Purchase area of Western Kentucky. In fall 2015, the university's enrollment was 10,614 students. MSU has the highest graduation rate (53.1%) and the highest retention rate (72.4%) of among public comprehensive universities in the Commonwealth. Murray State University has consistently been ranked among the top Southern regional and liberal arts colleges in the *U.S. News & World Report's* annual publication, *America's Best Colleges* and has been listed in Kiplinger's *100 Best Values in Public Colleges*. Senior Surveys indicate that students are positive about their overall education as well as their chosen major in teacher education at Murray State. The Southern Association of Colleges and Schools (SACS) has continuously accredited Murray State since 1928.

Until July 2014, the College of Education departments were: Adolescent, Career and Special Education; Early Childhood and Elementary Education; and Educational Studies, Leadership and Counseling. During a summer 2014 university-wide academic reconfiguration, the College of Education transformed into the College of Education and Human Services (COEHS). The three existing departments were joined by the Department of Community Leadership and Human Services and the Center for Communication Disorders. Please reference the COEHS organizational flowchart at <http://coekate.murraystate.edu/ncate/st/general.htm>.

COEHS is a member of the American Association of Colleges for Teacher Education (AACTE), Teacher Education Council of State Colleges and Universities (TESCU) and is accredited by the National Council for the Accreditation of Teacher Education (NCATE). Initial accreditation from NCATE was received in 1954. Murray State University has actively pursued and maintained NCATE accreditation for its teacher preparation program. In fall 2016, the unit will seek Council for the Accreditation of Educator Preparation (CAEP) accreditation.

Several unit programs are provided at these Kentucky extended regional campuses: Henderson, Hopkinsville, Madisonville, and Paducah. Candidates can earn undergraduate degrees in elementary education, middle school education, learning and behavior disorders, and interdisciplinary early childhood education. Each semester, the unit hosts an extended campus team session to share unit initiatives, provide professional development, and host course instructional team meetings. All instructors teaching the same course at all sites meet to create a common vision for their course, design common course assignments and assessments, and discuss ways to ensure a consistent, quality course delivery at all site locations.

Rationale for the Program

According to the U.S. Department of Labor, job prospects are best for teachers in high-demand fields, such as mathematics, sciences, languages, and bilingual education. Locations in urban or rural school districts are also considered to be high need areas for content area teachers. Teachers who are geographically mobile and who obtain licensure in more than one subject are likely to have a distinct advantage in finding a job. The Secondary Education program includes University Studies courses, professional education courses and subject-matter content majors or areas. Students can choose from three certification levels: grades 8-12, grades 5-12, and grades P-12. These programs will prepare students in the specified grade ranges in curriculum content areas. The programs range from approximately 120 credit hours to 130 credit hours in content areas as well as professional education coursework. The programs provide access to current best practices and research through practicum experiences and field-based learning activities. The culminating experience is a semester-long teaching experience in the appropriate content area in a public school. Students in these programs are assigned dual advisors: a faculty member in the subject-matter department and one in the Department of Adolescent, Career and Special Education.

Admission and Exit Requirements

Continuous assessment procedures are used to document and systematically monitor candidate progress throughout the education program to ascertain candidates' proficiency in the Kentucky Teacher Standards. Checkpoints provide data to facilitate faculty efforts to make recommendations for improvement, remediation, or candidates' continuance in the program. To

become admitted to the teacher education program, candidates must meet the following requirements:

- Attend an admission to teacher education orientation.
- Pass all portions of the CASE exam.
- Earn an overall undergraduate GPA ≥ 2.75 on a 4.0 point scale.
- Complete a minimum of 24 credit hours with a GPA ≥ 2.75 .
- Earn a “B” or higher in the following courses: ENG 105, MAT 117 (or higher), COM 161, EDU 103 (or equivalent).
- Receive their advisor’s recommendation to continue in the program through the interview process.
- Review and declare they will adhere to the Professional Code of Ethics for Kentucky School Personnel.
- Submit an official application to Teacher Education Services.

To be admitted to student teaching, candidates must be admitted to teacher education and meet these requirements:

- Attend an admission to student teaching orientation.
- File a formal application with Teacher Education Services two semesters prior to the student teaching term.
- Demonstrate teaching ability in field and practicum experiences.
- Complete 200 hours of field experiences and legislated components.
- Maintain a GPA ≥ 2.75 in overall coursework, professional education coursework, and major or area(s).

To begin student teaching, candidates must have senior, post-bac, or graduate status and have completed all major courses and specialty areas. In addition, they must meet these requirements:

- Complete all required professional teacher education courses with GPA ≥ 2.75 .
- Provide documentation of a current physical exam and a TB risk assessment.
- Obtain a criminal records check.
- Complete all PBIS modules.
- Supply TES with any required information.

To be recommended for initial certification, candidates must successfully complete student teaching and program requirements. They must earn passing scores on relevant *PRAXIS* specialty area tests and the *Principles of Learning and Teaching* exam. Because teacher certification requirements are subject to change, students who are registering for the tests need to refer to the Education Professional Standards (EPSB) website at www.kyepsb.net for current requirements.

Modes of Delivery

Course work is delivered through multiple venues: traditional (face-to-face), hybrid (part traditional, part online), and online.

Conceptual Framework

All teacher certification programs at Murray State University share the same conceptual framework. This document is available at http://coehsnet.murraystate.edu/program_submissions/.

Continuous Assessment

All teacher certification programs at Murray State University share a continuous assessment plan. This document is available at http://coehsnet.murraystate.edu/program_submissions/.

Program Experiences

A. Courses and Experiences

The Earth Science Education program supports the unit's theme by nurturing individuals to become reflective decision-makers. Reflection is the focus of course activities and is the primary means by which candidates integrate course experiences with Kentucky performance Standards (KTS), College of Education and Human Services Dispositions, and the candidates' own experiences, values, and beliefs about education. At the program's beginning, candidates are asked to reflect upon their own values and beliefs about education and seek integration of those with the COEHS Dispositions through assignments such as philosophy statements, growth plans, practicum work, and other reflective assignments. This process continues as candidates develop portfolio items to reflect their growth and understanding of educational principles leading to the program's end with the eligibility portfolio as a summative evaluation of their knowledge and demonstration of their skills according to Kentucky performance standards. Throughout, program coursework is designed to require planning and reflecting at increasing levels of expertise. Secondary education program faculty collaborate with content area faculty to teach concepts, principles, theories, standards, and research related to evidence-based practices in secondary curriculum, and assessment. The pedagogy coursework models the use of active instructional methods, real-life applications, and cognitive strategies to stimulate learning and provide motivation for the secondary learner. Along with a strong component of content knowledge in the areas of certification, the program is designed to integrate theory into practice with field experiences scheduled as an integral part of methods courses. As program policy, candidates follow curriculum guidesheets and RACR audits (a university advising program tool), and confer with advisors to help them to monitor their personal progress and prepare them for the continuous self-assessment required of professional educators.

At admission to teacher education, candidates are interviewed by faculty and asked to respond to the COEHS dispositions and the Kentucky Code of Ethics. The *Professional Code of Ethics for Kentucky School Personnel* is presented at three additional times to candidates - during orientations to teacher education and student teaching and during the student teaching interview. The Kentucky teacher performance standards are integrated throughout core courses and secondary methods courses as demonstrated in the table below. Candidates are introduced to the standards in early coursework where they gain knowledge (K) of the role performance standards play in becoming reflective decision-makers. As coursework progresses, the standards are

applied (A) in lesson plans and other instructional activities. At the end of the program, during extended practicum and student teaching, candidates are evaluated (E) for each standard in an eligibility portfolio. The portfolio is independently scored by two faculty members with content and instructional knowledge in the discipline. In addition, the Murray program allows for post-baccalaureate students to return and earn certification in a content area.

The Earth Science Education content emphasis further supports the College of Education and Human Services' theme. The Earth Science content area develops reflective decision-makers by utilizing an inquiry-based curriculum that begins with our introductory courses and laboratories. For example, students take GSC 101, Earth and the Environment that teaches the classic scientific method by learning to frame a question, developing a hypothesis and designing an experiment to validate or invalidate the hypothesis. Weather and Climate, GSC 125, is another course that is central to the earth science program. It is an inquiry-based University Studies science course with laboratory component that can be taught entirely online utilizing real-time and archived meteorological data interrelating scientific investigation within a technological context. These courses along with the additional core program courses and teacher education courses provide prospective earth science teachers with the appropriate content and pedagogical knowledge required for certification and a successful teaching career. An earth science teaching specialization is also available to students certified in another science content area such as biology, chemistry, or physics.

Code of Ethics

Teacher candidates read and examine the *Professional Code of Ethics for Kentucky School Personnel* when they attend an admission to teacher education orientation. They sign the *Declaration of Eligibility* to attest they (1) understand the standard for personal and professional conduct expected of a professional educator; (2) certify they have read, examined, and understand the *Professional Code of Ethics for Kentucky Certified School Personnel* and agree to abide by its terms during the course of preparation and careers as professional educators; and (3) affirm and declare that all information they give is true, correct, and complete to the best of their knowledge. This is one of the requirements for admission to teacher education.

Once the *Declaration of Eligibility* has been completed and signed, if the attestation changes during the time of participation in the teacher education program the Director of Teacher Education Services must be notified immediately and a new declaration must be submitted. Teacher candidates re-examine the *Professional Code of Ethics for Kentucky School Personnel* during the admission to student teaching orientation. They submit an updated *Declaration of Eligibility* at the conclusion of this orientation. Once candidates have completed all program and certification requirements, they submit a CA-1 application for Kentucky Certification. The application includes a section entitled *Character and Fitness*. By signing the form, candidates attest they have abided and will continue to adhere to the *Professional Code of Ethics for Kentucky School Personnel*.

Teaching Reading and Writing Skills

Candidates enhance their personal literacy skills by successfully completing two *Oral and Written Communication* university studies courses, ENG 105 *Critical Reading, Writing, and Inquiry* and COM 161 *Introduction to Public Speaking*. Furthermore, they complete additional

hours of Historical, Literary, and Philosophical university studies courses based upon their choice of content. Students further refine their writing skills by completing the unit's writing-intensive student teaching semester. Methods courses with included field experiences provide students with hands on planning, teaching, and tutoring instruction with secondary level public school students. If the student chooses an English content area, they complete 24 credit hours in literature, English, and writing. Furthermore, candidates demonstrate writing proficiency by passing the writing portion of the *Core Academic Skills for Educators* exam. The Praxis II examination in their content area is required for certification for students completing the degree. Candidates first learn how to address content literacy across the curriculum in EDU 303. They are trained to integrate content area literacy throughout their instructional design and delivery during the SEC 420, SEC 421, and SEC 422 practicum and clinical experiences.

Field Experiences

As per 16 KAR 5:040 legislation, Kentucky teacher candidates are required to complete a minimum of 200 clock hours of field experiences prior to student teaching. Candidates participate in varied activities in P12 school settings. Activities include engaging a diverse student population, observing in schools and related agencies (e.g. Family Resource Centers or Youth Service Centers), tutoring, interacting with families of students, attending school board and school-based council meetings, participating in a school-based professional learning community, and assisting teachers or other school professionals. Candidates record field experience hours and activities on the *LiveText Field Experience Module* system and the *Kentucky Field Experience Tracking System*. Course instructors, cooperating teachers, and university supervisors confirm candidates' participation. The unit provides training, video clips, and step-by-step directions to facilitate candidates', instructors' and cooperating teachers' recording efforts. The *Secondary Education Field Experiences Table* delineates this program's field experiences.

Please see field experience audit sheets for a description of the activities associated with the field/clinical experiences at the link below:

<http://www.murraystate.edu/academics/CollegesDepartments/CollegeOfEducationandHumanServices/TeacherEducationServices/componentauditsheets.aspx>

EPSB Themes

Effective educators need to be equipped with the knowledge, skills, dispositions, and decision-making skills necessary to address the needs of a diverse student population. Therefore, the Kentucky Education Professional Standards Board has identified four important themes (diversity, assessment, literacy, closing the achievement gap) to be integrated throughout candidates' academic course work. Furthermore, the unit's theme of *Educator as a Reflective Decision-Maker* is emphasized throughout candidates' program preparation. The *EPSB Themes for Secondary Education Core Education Courses* table depicts the degree to which these themes are addressed in multiple courses.

EPSB Themes for Secondary Education Core Education Courses

Course	EPSB THEMES				UNIT THEME Reflective Decision- Maker
	Diversity	Assessment	Literacy	Gap	
EDP 260	A				A
EDU 103	A	K		A	E
EDU 303	K	K	K	K	A
EDU 403	A	A		A	A
EDU 405	E	E		A	
SEC 421	E	E	E	E	E
SEC 420	E	E	K	K	
SED 300	K	K	K	K	A
SEC 421/422	E	E	E	E	

K – Knowledge, A – Application, E – Evaluation

Earth Science Education Content Course Descriptions

ARC 150 Introduction to Archaeology (3). Survey of archaeology's contribution to humankind's knowledge of prehistoric and historic development on a worldwide basis with emphasis placed upon discoveries rather than methods of archaeology.

GSC 101 The Earth and the Environment (4). An introduction to the materials of the earth and the processes that modify them to form our landscapes and create our physical environment. Includes an introduction to aerial photo and topographic map interpretation. Three hours of lecture and two hours of laboratory per week.

GSC 102 Earth Through Time (4). An introduction to the study of how the earth's environment has changed through time and the geological processes that are causing the changes. Topics include hypotheses regarding the earth's origin, the evolution of the earth's oceans and

atmosphere, and the interaction between environmental factors and appearance of life on the earth. The methods that geologists use to measure time will be identified and described. Particular emphasis will be given to the North American continent. The laboratory will focus on interpretation of earth history through the study of minerals, rocks, and fossils. Three hours of lecture and two hours of laboratory per week. Prerequisite: GSC 101 or 199.

GSC 110 World Geography (3). A course designed to introduce students to the geographic distribution of major regions of the world. Attention will be focused on the delicate interrelationships between the natural landscapes of the earth and corresponding major cultural activities.

GSC 125 Weather and Climate (4). Introduction to the dynamics of the atmosphere and how humans interact with and are influenced by atmospheric processes and climatic variations. Three hours of lecture and two hours of laboratory per week.

GSC 202 Introduction to Geographic Information Science (4). This course is designed to provide an introduction to the fundamental principles and concepts of the mapping sciences. The course will focus on digital image processing and geographic information systems as techniques utilized in such areas as land cover and land capability mapping. The introduction of global positioning systems (GPS) as an auxiliary mapping tool is also included in the course. Three hours lecture and two hours lab per week.

GSC 301 Understanding Scientific Communication (2). Course concentrates on the methods for preparation and presentation of scientific papers, posters, and oral communication. Students will utilize a data set to produce a publication quality manuscript, a poster suitable for a scientific meeting, and a 15-minute presentation such as would be given at a scientific meeting. Topics covered include abstracts, the nature of scientific writing, structure and organization of scientific publication, use of literature, graphics and graphic design, and methods of polishing the oral presentation. Prerequisites: COM 161 and ENG 105. (Same as SCI 301)

GSC 303 Introduction to Water Science (3). An introduction to the study of the marine and freshwater environments of the earth. Study of the oceans as the largest component of the earth's hydrosphere will emphasize geological forces which are shaping the ocean floor, ocean currents and tides, the origin of ocean salt, and life in the ocean. Study of freshwater components of the earth's hydrosphere will emphasize connections with the ocean and the special role of each component in the earth's hydrologic cycle. Prerequisite: one college-level physical or biological science course, or permission of instructor.

GSC 305 Introduction to Cartography (3). Course will emphasize the art, science, and history of the mapping process. Elements of map design and construction will be explored, including coordinate systems, map projections, design concerns, and information management necessary for map creation. Fundamental map skills will be developed, common map applications covered, and future mapping trends explored. Lecture topics will be augmented by hands-on exercises using current GIS software.

GSC 312 Introduction to Remote Sensing (4). The purpose of this course is to introduce students to the fundamental concepts and techniques in the processing, interpretation and utilization of remotely sensed imagery. The focus of the course is on applications in such fields as agriculture, environmental studies, minerals exploration and resources management/planning. Three hours lecture and two hours lab per week.

GSC 336 Principles of Geomorphology (4). The origin, characteristics and development of landforms and the processes which determine their formation. Three hours lecture and two hours lab per week.

GSC 350 Field Techniques in Geosciences (3). An introduction to the variety of field techniques utilized by geoscientists in the geologic, environmental, and archaeological fields. Emphasis is placed on the techniques of field surveying and mapping; locational assessment utilizing Global Positioning Systems; orienteering with compass and topographic map; basic descriptive field geology; soil sampling and description; remote and direct hydrologic assessment; and land cover/land use mapping. Field trips will be taken to locations of geologic or environmental significance to the region. Prerequisite: junior status or permission of the instructor.

Modes of Delivery

Secondary education courses are delivered on the Murray State University campus using face-to-face and online delivery methods. Many instructors also use a blend of approaches, or hybrid model of delivery. Faculty use web-based learning platforms such as *Canvas* and *LiveText* to supplement and enhance face-to-face instruction.

Modes of Delivery for Program Content Courses

Course Number	Face to Face	Web	On-Campus
EDU 103	X	X	X
EDU 303	X		X
EDU 403	X		X
EDU 405	X		X
SEC 420	X		Practicum Sites
SEC 422	X		Practicum Sites
SEC 421	X		Student Teaching Sites
EDP 260	X	X	X
SED 300	X		X

B. Specialty Professional Association (SPA) Standards

National Science Teachers Association - NSTA

NSTA STANDARD	Courses/Activities/ Assessments
<p>1. Content Knowledge. Effective teachers of science understand and articulate the knowledge and practices of contemporary science. They interrelate and interpret important concepts, ideas, and applications in their fields of licensure. Preservice teachers will:</p> <p>(a) Understand the major concepts, principles, theories, laws, and interrelationships of their fields of licensure and supporting fields as recommended by the National Science Teachers Association;</p>	<p>All GSC course required for Earth Science Curriculum</p>
<p>(b) Understand the central concepts of the supporting disciplines and the supporting role of science specific technology;</p>	<p>MAT 150, CSC 101, AST 115, AST 116, ARC 150</p>
<p>(c) Show an understanding of state and national curriculum standards and their impact on the content knowledge necessary for teaching P-12 students.</p>	<p>All GSC required courses</p>
<p>2. Content Pedagogy. Effective teachers of science understand how students learn and develop scientific knowledge. Preservice teachers use scientific inquiry to develop this knowledge for all students. Preservice teachers will:</p> <p>(a) Plan multiple lessons using a variety of inquiry approaches that demonstrate their knowledge and understanding of how all students learn science;</p>	<p>All GSC required courses</p>
<p>(b) Include active inquiry lessons where students collect and interpret data in order to develop and communicate concepts and understand scientific processes, relationships and natural patterns from empirical experiences. Applications of science-specific technology are included in the lessons when appropriate;</p>	<p>GSC 202, 312, 305, 336, 350</p>
<p>(c) Design instruction and assessment strategies that confront and address naïve concepts/preconceptions.</p>	<p>GSC 101, 102, 125, 303</p>
<p>3. Learning Environments. Effective teachers of science are able to plan for engaging all 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, inquiry, and appropriate safety considerations. Candidates design and select learning activities, instructional settings, and resources--including science-specific technology, to achieve those goals; and they plan fair and equitable assessment strategies to evaluate if the learning goals are met. Preservice teachers will:</p> <p>(a) Use a variety of strategies that demonstrate the candidates' knowledge and understanding of how to select the appropriate teaching and learning activities – including laboratory or field settings and applicable instruments and/or technology- to allow access so that all students learn. These strategies are inclusive and motivating for all students;</p>	<p>GSC 102, 125, 305, 312, 336, 350</p>
<p>(b) Develop lesson plans that include active inquiry lessons where students collect and interpret data using applicable science-specific technology in order to develop concepts, understand scientific processes, relationships and natural patterns from empirical experiences. These plans provide for equitable achievement of science literacy for all students;</p>	<p>GSC 305, 312, 336, 350</p>

<p>(c) Plan fair and equitable assessment strategies to analyze student learning and to evaluate if the learning goals are met. Assessment strategies are designed to continuously evaluate preconceptions and ideas that students hold and the understandings that students have formulated;</p>	GSC 301
<p>(d) Plan a learning environment and learning experiences for all students that demonstrate chemical safety, safety procedures, and the ethical treatment of living organisms within their licensure area.</p>	N/A
<p>4. Safety. Effective teachers of science can, in a P-12 classroom setting, demonstrate and maintain chemical safety, safety procedures, and the ethical treatment of living organisms needed in the P-12 science classroom appropriate to their area of licensure. Preservice teachers will:</p> <p>(a) Design activities in a P-12 classroom that demonstrate the safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used within their subject area science instruction;</p>	All GSC required courses
<p>(b) Design and demonstrate activities in a P-12 classroom that demonstrate an ability to implement emergency procedures and the maintenance of safety equipment, policies and procedures that comply with established state and/or national guidelines. Candidates ensure safe science activities appropriate for the abilities of all students;</p>	All GSC required courses
<p>(c) Design and demonstrate activities in a P-12 classroom that demonstrate ethical decision-making with respect to the treatment of all living organisms in and out of the classroom. They emphasize safe, humane, and ethical treatment of animals and comply with the legal restrictions on the collection, keeping, and use of living organisms</p>	N/A
<p>5. Impact on Student Learning. Teachers of science create a community of diverse learners who construct meaning from their science experiences and possess a disposition for further exploration and learning. They use, and can justify, a variety of classroom arrangements, groupings, actions, strategies, and methodologies. To show that they are prepared to create a community of diverse learners, teachers of science must demonstrate that they</p> <p>(a) Collect, organize, analyze, and reflect on diagnostic, formative and summative evidence of a change in mental functioning demonstrating that scientific knowledge is gained and/or corrected;</p>	All GSC required courses
<p>(b) Provide data to show that P-12 students are able to distinguish science from nonscience, understand the evolution and practice of science as a human endeavor, and critically analyze assertions made in the name of science;</p>	EDU 303, SEC 420, SEC 421 – all lesson planning includes adaptation to students with special needs
<p>(c) Engage students in developmentally appropriate inquiries that require them to develop concepts and relationships from their observations, data, and inferences in a scientific manner.</p>	EDU 303, SEC 420, SEC 421 – all provide general teaching strategies
<p>6. Professional Knowledge and Skills. Effective teachers of science strive continuously to improve their knowledge and understanding of the ever changing knowledge base of both content, and science 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. Preservice teachers will:</p> <p>(a) Engage in professional development opportunities in their content field such as talks, symposiums, research opportunities, or projects within their community;</p>	Research projects and presentations embedded within: GSC 301, 305, 312, 336

(b) Engage in professional development opportunities such as conferences, research opportunities, or projects within their community.	GSC 312
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Earth Science Unifying Concepts

A: Competency (numbers 1-5)	B: Required Courses or advising requirements
1. Multiple ways we organize our perceptions of the world and how systems organize the studies and knowledge of science.	All GSC core courses
2. Nature of scientific evidence and the use of models for explanation.	All GSC core courses
3. Measurement as a way of knowing and organizing observations of constancy and change.	GSC 202, 305,
4. Evolution of natural systems and factors that result in evolution or equilibrium.	GSC 101/GSC102/ARC 150
5. Interrelationships of form, function, and behaviors in living and nonliving systems.	GSC 101/ GSC 102

Science Content Requirement Analysis Tables A, B, and C for the Earth/Space Sciences

Table A: Earth/Space science

A. Core Competencies (numbers 1-12)	B: Required Courses
1. Characteristics of land, atmosphere, and ocean systems on Earth	GSC 101/GSC 102/GSC 125/GSC 303
2. Properties, measurement, and classification of Earth materials	GSC 101/ GSC 102/GSC 336
3. Changes in the Earth including land formation and erosion	GSC 101/ GSC 102/ GSC 336
4. Geochemical cycles including biotic and abiotic systems	GSC 101/GSC 102/ GSC 336
5. Energy flow and transformation in Earth systems	GSC 101/GSC 102/ GSC 125/GSC 336
6. Hydrological features of the Earth	GSC 101/ GSC 102/ GSC 303/GSC 350
7. Patterns and changes in the atmosphere, weather, and climate	GSC 125
8. Origin, evolution, and planetary behaviors of Earth	GSC101/GSC 102/AST 115
9. Origin, evolution, and properties of the universe	AST 115/ GSC 101/ GSC 125
10. Fundamental processes of investigating in the Earth and space sciences	All GSC core courses
11. Sources and limits of natural resources	GSC 101
12. Applications of Earth and space sciences to environmental quality and to personal and community health and welfare.	GSC 101/ GSC 125/ GSC 202/GSC 305/GSC 312

Table B: Earth/Space Science

B. Advanced Competencies (numbers 13-22)	B: Required Courses or advising requirements
13. Gradual and catastrophic changes in the Earth	GSC 101/ GSC 102
14. Oceans and their relationship to changes in atmosphere and climate.	GSC 101/GSC 125/ GSC 303
15. Hydrological cycles and problems of distribution and use of water	GSC 101/GSC 125/GSC 303/
16. Dating of the Earth and other objects in the universe	GSC 101/GSC 102/ARC150
17. Structures and interactions of energy and matter in the universe.	AST 115
18. Impact of changes in the Earth on the evolution and distribution of living things.	GSC 102/ARC 150/GSC 336
19. Issues related to changes in Earth Systems such as global climate change, mine subsidence, and channeling of waterways.	GSC 101/GSC 102/GSC 125/ ARC 150/GSC 336

20. Historical development and perspectives, including contributions of significant figures and underrepresented groups, and the evolution of theories in the Earth and space sciences.	GSC 101/GSC 102/AST 115
21. How to design, conduct, and report research in the Earth and space sciences	GSC 102/ ARC 150/GSC 202/GSC 305/GSC 312/GSC 336/GSC 350
22. Applications of the Earth and space sciences and related technologies in society, business, industry, and health fields.	GSC 202/GSC 305/GSC 312

Table C: Earth/Space Science

C. Supporting Competencies (numbers 23-47)	B: Required Courses
Biology	Recommended not required
23. Evolution	
24. Ecology	
25. Population dynamics	
26. Flow of energy	
27. Flow materials through Earth systems	
Chemistry	Recommended not required
28. Broad concepts of inorganic chemistry	
29. Basic laboratory techniques of inorganic chemistry	
30. Broad concepts of organic chemistry	
31. Basic laboratory techniques of organic chemistry	
32. Physical chemistry	
33. Biochemistry	
Physics including	Recommended not required
34. Electricity	
35. Forces and motion	
36. Energy	
37. Magnetism	
38. Thermodynamics	
39. Optics	
40. Sound	
41. Basic quantum theory	
Mathematics	
42. Statistics	MAT 150
43. Probability	MAT 150

C. Kentucky Teacher Standards

The Kentucky Teacher Performance Standards are integrated throughout core courses and secondary education methods courses as demonstrated in the table below. Candidates are introduced to the standards in early coursework where they gain knowledge (K) of the role performance standards play in becoming reflective decision-makers. As coursework progresses, the standards are applied (A) in lesson plans and other instructional activities. At the end of the program, during student teaching, candidates are evaluated (E) for each standard in an eligibility portfolio. The portfolio is independently scored by two faculty members with content and instructional skill in the appropriate content area. Secondary and content area instructors use web-based learning platforms such as *Canvas* to supplement and enhance face-to-face instruction. The *Kentucky Teacher Standards* matrix demonstrates the integration of Kentucky Teacher Standards throughout secondary education coursework.

Kentucky Teacher Standards

Course	KTS 1	KTS 2	KTS 3	KTS 4	KTS 5	KTS 6	KTS 7	KTS 8	KTS 9	KTS10
CSC 199	K					A				
EDP 260		K	K	A		A	A	A		
EDU 103	A	K	A	K	K	K	A	K	K	K
EDU 303		A*	A	A	A	A	A	A	K	
EDU 403	A	K	A	K	K	K	A	K	K	A
EDU 405	A		A	E	A					
SEC 420	K	A	K	A					K	
SEC 421/422	E*									
SED 300	A	K	K			K	K	A	K	
K – Knowledge, A – Application, E – Evaluation, * - Signature Assignment										

Candidates' content knowledge (KTS 1) is developed in multiple Earth Science courses (GSC 101, GSC 102, GSC 125). The standards are evaluated by a PRAXIS exam.

- | | |
|--|---|
| <ul style="list-style-type: none"> • KTS 1: Content Knowledge • KTS 2: Design Instruction • KTS 3: Learning Climate • KTS 4: Implements Instruction • KTS 5: Assessment | <ul style="list-style-type: none"> • KTS 6: Technology • KTS 7: Reflection • KTS 8: Collaboration • KTS 9: Professional Development • KTS 10: Leadership |
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D. Kentucky Core Academic Standards

All teacher certification candidates in the Murray State University education program become familiar with the Kentucky Core Academic Standards (KCAS) in EDU 103 *Issues and Practices of American Education* or the equivalent course specific to their discipline. This course is designed to provide students with an overview of the field of education. The instructor of this course introduces the KCAS to raise candidates' initial awareness of KCAS as a framework for standards-based instruction. In EDU 303 *Strategies of Teaching*, the instructor spends several class sessions acquainting candidates with the KCAS. In this course, candidates develop lesson planning. All lesson plans, instructional, activities, and assessments must be aligned to the KCAS standards in the appropriate content area. Additionally, candidates take EDU 405 *Evaluation and Measurement in Education*. Candidates develop proficiency in designing standards-based assessment instruments and interpreting the results to inform future instruction. This course's key assessment provides an introduction to the Teacher Performance Assessment (TPA) candidates complete during their student teaching experience.

In the secondary education program, candidates apply what they have learned about designing KCAS standards-based instruction and assessment instruments during the field and practicum experiences associated with these professional education methods courses.

Kentucky Core Academic Standards

Course	KCAS Content Area	Activity
EDU 303	Specific to content area	Lesson plans, micro-teaching activities, mock classroom situations
SEC 420	Specific to content area	Lesson plans, unit plans, field experiences
SEC 422	Specific to content area	Lesson plans, unit plans, field experiences
SEC 421	Specific to content area	Student teaching experience -Designing and implementing instruction

During the student teaching semester, candidates complete TPAs which demonstrate their proficiency in designing, implementing, and reflecting upon KCAS-aligned instructional units, lessons, and assessment instruments. They draft a KCAS standards-based instructional unit. Candidates use the results from a pre-assessment to modify the unit by differentiating instruction to address students' academic needs. They teach and reflect upon a series of lessons before administering the post-assessment. Candidates analyze post-assessment data to discern student growth, continuing academic needs, and achievement gaps to inform future instruction.

E. Program Faculty

Name	Highest Degree, Field, & University	Assignment: Indicate the role(s) of the faculty member (1)	Faculty Rank (2)	Scholarship (3), Leadership in Professional Associations, and Service (4); List up to 3 major contributions in the past 3 years (5)*	Status (FT/PT to institution, unit, and program)
Benson, Jane	M.S., Geography, Murray State University	Staff-MARC/WSI	Adjunct faculty	N/A	Full-time to Institution, Part-time to unit, Part-time to Program
Busby, Michael	M.S., Geography, Murray State University	Staff -MARC	Adjunct faculty	URISA certified GISP; Association of American Geographers	Full-time to Institution, Part-time to unit, Part-time to Program
Casey, Michelle	Ph.D., Geology and Geophysics, Yale University	Faculty	Assistant Professor	Post-doctoral research at Kansas University, 6 peer-reviewed publications	Full-time to Institution, Full-time to unit, Part-time to Program
Cetin, Haluk	Ph.D., Remote Sensing/GIS, Purdue University	Faculty, Director, Hyperspectral Laboratory	Professor	President, ASPRS Mid-South Region; MSU Distinguished Mentor Award; coordinator, USGS Kentucky View Project Director	Full-time to Institution, Full-time to unit, Part-time to Progra

El-Masri, Bassil	Ph.D., Geography, Indiana University	Faculty	Assistant Professor	Post-doctoral research experience at Univ of Illinois, peer-reviewed publications	Full-time to Institution, Full-time to unit, Part-time to Program
Hong, Sung-ho	Ph.D., Hydrology, New Mexico Tech	Faculty	Assistant Professor	3 peer reviewed publications, GSC representative to Faculty Senate	Full-time to Institution, Full-time to unit, Part-time to Program
Kipphut, George	Ph.D., Geological Sciences, Columbia University	Faculty, Department Chair	Professor	Appointed as State Geographer; MSU Weber Award for Excellence, served on NSF review panels	Full-time to Institution, Full-time to unit, Part-time to Program
Ortmann, Anthony	Ph.D., Archaeology, Tulane University	Faculty	Associate Professor	Director, MSU Summer Archaeology Field School, 5 peer-reviewed publications	Full-time to Institution, Part-time to unit, Part-time to Program
Stinchcomb, Gary	Ph. D., Geology, Baylor University	Faculty, Geosciences, and the Watershed Study Institute	Assistant Professor	Post-doctoral research experience at Penn State University, 6 peer-reviewed publications	Full-time to Institution, Part-time to unit, Part-time to Program
Wesler, Kit	Ph.D., Anthropology-Archaeology, University of North Carolina, Chapel Hill	Faculty, Director of MARC, and Director of the Archaeology Laboratory	Professor	Jesse D. Jones Endowed Professor of Geosciences and Archaeology	Full-time to Institution, Full-time to unit
Zhang, Robin	Ph.D. Geography, The University of Western Ontario	Faculty	Professor	MSU Service Learning Award; MSU Emerging Scholar Award	Part-time to Program

Education Faculty

NAME	HIGHEST DEGREE, FIELD, & UNIVERSITY	ASSIGNMENT	FACULTY RANK	CERTIFICATIONS, EXPERIENCE, SCHOLARSHIP, LEADERSHIP IN PROFESSIONAL ASSOCIATIONS, AND SERVICE	STATUS
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Allen, David	Ph.D, Education- School Improvement, Text State University-San Marcos	Director of Center for Environmental Education Teaches assessment and environmental education courses	Assistant Professor	<ul style="list-style-type: none"> • Educational Testing Services, Assessment Specialist – 10 years, Middle School Science – 6 years, High School Science – 3 years • Allen, D. (August 2015). Project Learning Tree survey of use. Annual conference of the Japanese Society of Environmental Education, Nagoya, Japan. • Allen, D. (October 2014). Perceptions of environmental education from across a university campus. Annual conference of the North American Association for Environmental Education. Ottawa, Ontario, Canada. • Waite, D., & Allen, D. (2003).Corruption and abuse of power in educational administration. Urban Review, 35(4), 281-296 	Full-time to institution Part-time to unit Part-time to program
Brown, Cory	Ph.D, Multicultural and Equity Studies in Education, Ohio State University	Assistant Professor Teaches foundation courses	Assistant Professor	<ul style="list-style-type: none"> • High School English – 2 years, Full-Time Academic Advisor, University of Cincinnati – 5 years, University Appointments, Education – 10 years. • Dixon, A. D., Dodo-Seriki, V. and Brown, C. T. (2014). Culturally relevant pedagogy at the intersections of race, gender, and class. Paper presented at the biennial meeting of the International Conference on Urban Education, Montego Bay, Jamaica. • Dodo-Seriki, V., Brown, C. T., and Fasching-Varner, K. (Accepted and in preparation, 2015). The permanence of racism in teacher education. In J. K. Donnor, R. Reynolds, M. Lynn, and A. D. Dixon (Eds.). Is the post-racial still racial?:Understanding the relationship between race 	Full-time to institution Part-time to unit Part-time to program

				<p>and education. NSSE Yearbook, Teachers College Record.</p> <ul style="list-style-type: none"> National Council of Teachers for English Assembly of Research - Program Reviewer and Planning Committee, 2015 (New Orleans, Louisiana) 	
Campoy, Renee	Ed.D. Curriculum & Instruction University of Missouri-St. Louis	Assistant Dean (Part-time) Teaches EDU 405 (part-time) NCATE Coordinator	Professor	<ul style="list-style-type: none"> Book: (2004) Case study analysis in the classroom Presentation: (2006) AERA BOE Team member: (2005-present) 	Full-time to Institution, Full-time to Unit, Part-time to Program
Gierhart, Greg	MA, Education, Murray State University	Hart Residential College Head Teaches instructional strategies and math methods courses	Lecturer	<ul style="list-style-type: none"> Certifications & Experience: KY Teaching Lic., Middle school Spanish, Science, and Math, endorsement for teaching early elementary, DPP, School Administration. 10 years experience – middle school. Murray Lion's Club, National Council of Teachers of Mathematics, National Science Teachers Association, Association of Supervisors and Curriculum Development, International Literacy Association, Association for Middle Level Education, Phi Delta Kappan, Phi Kappa Phi KY Department of Education, Math & Science Leadership Networks 	Full-time to institution Part-time to unit Part-time to program
Matlock, Pam	MA Special Education, Murray State University	Paducah Campus 2+2 Education Coordinator Teaches special education courses	Lecturer	<p>First Book, Chapter Advisor - Monthly distribution of new books to low socioeconomic students in public schools,</p> <p>KEA - SP, Chapter Advisor -</p> <p>Global Education Outreach Committee, Chairperson</p>	Full-time to institution Part-time to unit Part-time to program
Stormer, Kimberly	Ph.D. Instructional Leadership Academic and Curriculum	Middle Level Education Program Coordinator, Teaches middle	Assistant Professor	<p>Taught for 7.5 years in large urban school district; and</p> <p>Worked as a School Improvement Specialist for the</p>	Full-time to institution Part-time to unit

	University of Oklahoma	level education courses.		Oklahoma State Department of Education Diversity Chair Kentucky Council Teachers of English Advisor Murray State Middle Level Association	Part-time to program
Jacobs, Martin	Ed.D. Curriculum and Instruction, Florida International University	Part-time to Program: Middle School Reading	Professor	Scholarship focused upon Teacher Leadership, with presentation and publication outcomes Faculty Representative: Murray State Board of Regents 11 years P12 teacher; 5 years elementary assistant principal	Full-time to institution Part-time to unit Part-time to program
Musselman, Meagan	Ph.D. Curriculum & Instruction Southern Illinois University	Teacher Leader Program Coordinator, Teaches middle level undergraduate education courses and graduate courses across multiple levels	Associate Professor	Taught math and science in public middle schools; and Education consultant to area schools President of Kentucky Association of Teacher Educators	Full-time to institution Part-time to unit Part-time to program
Gierhart, Greg	MA-Murray State University Pursuing PhD Southern Illinois University-Carbondale	Early Childhood and Elementary Education Teach mathematics to IECE and elementary education majors.	Lecturer	Taught 10 years in a rural school district Provisional Certificate For Teaching In The Middle Grades 5-8 Mathematics Field: Science Professional Certificate for Middle School Teaching	Part-time to institution Part-time to unit Part-time to program
Hyde ,Lori	MA- Murray State University	REA 407 at the Paducah Campus	Adjunct Instructor	6 th grade Reading and Writing at Lone Oak Middle School	Part-time to institution

	in Reading and Writing			Certified Elementary Education Certified Reading and Writing Literacy Specialist K-12 Super Saturdays Instructor	Part-time to unit Part-time to program
Myers, Hannah	MA- Murray State University in Education and Education Administration	MID 307	Adjunct Instructor	Magistrate for Hopkins County- Co-Chair of Build Smart Murray Campaign Chairman of the City Council	Part-time to institution Part-time to unit Part-time to program

F. Curriculum Contract/ Guidesheet

Program coordinators work with faculty to ensure current guidesheets are available for course instructors and students. These may be accessed on the unit’s intranet site at <http://coekate.murraystate.edu/coecms/ncate/manager/advsheet/>.

Revised 08/15

**MURRAY STATE UNIVERSITY
BACHELOR OF SCIENCE DEGREE
EARTH SCIENCE TEACHER CERTIFICATION PROGRAM
GRADES 8 THROUGH 12**

2015-2016 Academic Bulletin

Student’s Name: _____ M# _____ Date: _____

University Studies for B.S. degree – 44 hours

COURSES	HRS	SEMESTER	GRADE
I. <u>Oral and Written Communication – 7 hours</u>			
ENG 105 Critical Reading, Writing & Inquiry	4	_____	_____
COM 161 Introduction to Public Speaking	3	_____	_____
II. <u>Scientific Inquiry, Methodologies, & Quantitative Skills– 13 hours</u>			
MAT 150 Algebra and Trigonometry	5	_____	_____
GSC 101 The Earth and the Environment	4	_____	_____
GSC 102 Earth Through Time	4	_____	_____
III. <u>Global Awareness, Cultural Div., & the World’s Art. Trad. - 3 hours</u>			
GSC 110 World Geography	3	_____	_____
IV. <u>Social and Self-Awareness and Responsible Citizenship - 6 hours</u>			
Ethics Elective _____	3	_____	_____
EDP 260 Psychology of Human Development	3	_____	_____
V. <u>World’s Historical, Literary, and Philosophical Traditions - 6 hours</u>			
HUM 211 Western Humanities Tradition	3	_____	_____
CIV 201 or CIV 202	3	_____	_____
VI. <u>University Studies Approved Electives - 9 hours</u>			

ARC 150 Introduction to Archaeology	3	_____	_____
CSC 101 Problem Solving Using Computers	3	_____	_____
EDU 103 Issues and Practices of American Education	3	_____	_____

GSC Earth Science Certification Curriculum - 120 hours

Required Courses - 32 hrs

AST 115 Introductory Astronomy	3	_____	_____
AST 116 Introductory Astronomy Laboratory	1	_____	_____
GSC 100T Transitions	1	_____	_____
GSC 125 Weather and Climate	4	_____	_____
GSC 202 Introduction to Geographic Information Sciences	4	_____	_____
GSC 301 Understanding Scientific Communication	2	_____	_____
GSC 303 Introduction to Water Science	3	_____	_____
GSC 305 Introduction to Cartography	3	_____	_____
GSC 312 Introduction to Remote Sensing	4	_____	_____
GSC 336 Principles of Geomorphology	4	_____	_____
GSC 339 Field Geology	3	_____	_____

or

GSC 350 Field Techniques in Geosciences

Required for Secondary Certification - 32 hrs

EDU 303 Strategies of Teaching	3	_____	_____
EDU 403 Structures and Foundations of Education	2	_____	_____
EDU 405 Evaluation and Measurement in Education	3	_____	_____
SEC 420 Practicum in Secondary Schools	3	_____	_____
SEC 421 Student Teaching in the Secondary School	14	_____	_____
SEC 422 Extended Practicum	4	_____	_____
SED 300 Educating Students with Disabilities	3	_____	_____

Required Limited Electives - 12 hrs

(course 1)	_____	_____	_____
(course 2)	_____	_____	_____
(course 3)	_____	_____	_____
(course 4)	_____	_____	_____

*NOTE: Check Undergraduate Bulletin for approved electives.

All placements for student teaching are made the semester prior to the professional semester. Only students fully admitted to teacher education will be considered for placement. See below the Requirements for Admission to Teacher Education.

PRAXIS TEST:

The following scores on the Specialty Exams are required to be eligible for a teaching certificate after 9/1/05:

Earth Science: Content Knowledge (0571) – Passing Score of 145

Principles of Learning and Teaching (0524) – Passing Score of 161

**REQUIREMENTS FOR ADMISSION TO TEACHER EDUCATION AND STUDENT TEACHING
AT MURRAY STATE UNIVERSITY Rev. (9/2015)**

Teacher Education

To be admitted to teacher education, students must:

1. Attend an admission to teacher education orientation.
2. Earn passing scores on the Core Academic Skills for Educators (CASE) test with these subject scores – Reading 156, Writing 162, and Mathematics 150. Request ETS to send

scores to Teacher Education Services electronically by using this code, R1494. If any of the PPST subject areas were passed prior to September 1, 2014, use these PPST scores - Reading 176, Writing 174, and Math 174. GRE (Graduate Records Exam) scores may be used for Graduate Students only with a minimum passing score of 150 in verbal, 143 in quantitative, and 4.0 in analytical writing.

3. Earn an overall undergraduate GPA of > 2.75 on a 4.0 scale at the point of admission. This 2.75 minimum GPA remains a requirement throughout the teacher certification program.
4. Complete a minimum of 24 credit hours with a GPA > 2.75 to include the following coursework:
 - a. ENG 101, 102, 104 or 105 with a “B” or higher
 - b. MAT 117 (or higher level math) with a “B” or higher
 - c. COM 161 or HON 165 with a “B” or higher
 - d. EDU 103 with a “B” or higher (or AED 380 or EDU 104 or CTE 200 or MSU 123 or ELE 605 [graduate students])
5. Participate in the admission to teacher education interview and receive their academic advisor’s recommendation to continue the program.
6. Review the Professional Code of Ethics for Kentucky School Personnel. Sign the
 - a. Declaration of Eligibility (pink sheet) affirming a commitment to uphold the code and
 - b. acknowledging awareness of information required for state certification. If answers given on the Declaration of Eligibility change during the time of participation in the teacher education program, the Director of Teacher Education Services must be notified immediately.

These requirements must be documented in *Recruiter*. CASE or GRE scores must be sent to MSU (R1494) via ETS. Admission will only be granted following a successful review by Teacher Education Services.

NOTE: Students who have not been admitted to Teacher Education will not be eligible to enroll in upper level courses that specify admission to teacher education as a prerequisite.

Student Teaching

To be admitted to student teaching, students must have

- 1) been granted admission to Teacher Education;
- 2) filed a formal application in Teacher Education Services two semesters prior to the term in which student teaching is desired (Applications are distributed at scheduled student teaching orientations only.);
- 3) earned and maintained GPA ≥ 2.75 in major/areas, professional education, and overall;
- 4) demonstrated teaching ability in field and clinical situations;
- 5) documented completion of 200 or more field hours and components (beginning 9/1/2013);
- 6) senior, post-bac, or graduate status and have completed all major courses and specialty areas;

- 7) been admitted to Teacher Education;
- 8) completed all required professional teacher education courses (EDU 103, EDP 260,
- 9) EDU 303, SED 300 and EDU 403, etc. – see specific requirements by major or area) with a GPA > 2.75 GPA;
- 10) filed a valid and current medical examination, which includes a TB risk assessment (to begin student teaching within six months of exam);
- 11) obtained a criminal records background check; and
- 12) supplied TES with any other required information (transcripts, course substitution forms, etc.).

General Requirements for Kentucky Certification

Graduates who wish to be recommended by MSU for an initial Kentucky teaching certificate must have

- 1) successfully completed an approved teacher education program including student teaching;
- 2) filed an application for certification (CA-1) with Teacher Education Services at MSU;
- 3) obtained at least minimal scores required on PRAXIS specialty area tests and the appropriate Principles of Learning and Teaching Test (PLT);
- 4) completed all applicable **computer literacy and applications** requirements;
- 5) earned a bachelor’s degree;
- 6) mailed a copy of criminal record check to EPSB; and
- 7) sent official transcript to EPSB.

In addition, in Kentucky, full certification requires the completion of the Kentucky Teacher Internship Program. To be recommended for certification in other states, all Kentucky requirements must be met.

NOTE: Requirements for teacher certification are established by the Kentucky Education Professional Standards Board (KEPSB). Students are cautioned that changes in these requirements may occur after publication of the current Murray State University *Bulletin*. For the most current information, students should check with an advisor in one of the departments in the College of Education.

Teacher certification requirements are subject to change. Before registering for the test(s), please refer to the Education Professional Standards Board (EPSB) website at www.kyepsb.net for current requirements or contact Ms. Rice at 502-564-4606 or 888-598-7667.

Student’s Signature Date

Advisor’s Signature Date

G. Syllabi

Common course syllabi, posted on the unit's intranet site, ensure all course instructors provide a consistent, quality delivery of each education course. Furthermore, these guidesheets also contain important Admission to Teacher Education information. Guidesheets are shared during advising sessions and aligned with candidates' MSU RACR audits. Current guidesheets are posted on <http://coekate.murraystate.edu/coecms/ncate/manager/advsheet/>.

Core Courses

AST 115 Introductory Astronomy

AST 116 Introductory Astronomy Laboratory

GSC 100T Transitions

GSC 125 Weather and Climate

GSC 202 Introduction to Geographic Information Sciences

GSC 301 Understanding Scientific Communication

GSC 303 Introduction to Water Science

GSC 305 Introduction to Cartography

GSC 312 Introduction to Remote Sensing

GSC 336 Principles of Geomorphology

GSC 339 Field Geology

GSC 350 Field Techniques in Geosciences

Required for Secondary Certification

EDU 303 Strategies of Teaching

EDU 403 Structures and Foundations of Education

EDU 405 Evaluation and Measurement in Education

SEC 420 Practicum in Secondary Schools

SEC 421 Student Teaching in the Secondary School

SEC 422 Extended Practicum

SED 300 Educating Students with Disabilities