



MURRAY
STATE UNIVERSITY

**College of Education
and Human Services**

**CHEMISTRY EDUCATION (GRADES 8-12)
BACHELORS OF SCIENCE & BACHELORS OF ARTS
PROGRAM SUBMISSION
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The content courses in this program are used for transcript reviews for entrance into our
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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 Chemistry 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 Chemistry Department at MSU has thirteen full time faculty who are actively engaged both in teaching and research. It offers a B.S. in Chemistry fully certified by the American Chemical Society. Students enrolled in the Chemistry Education Program may choose to complete a Chemistry Major or Chemistry Teacher Specialization program. The courses encompass different Chemistry sub-disciplines and characterized by their academic rigor. The Chemistry major courses integrate both lecture and laboratory instructional activities: CHE 120 (Chemical Laboratory Safety), CHE201 and CHE202 (the upper level General Chemistry sequence), CHE305 (Analytical Chemistry), CHE312 and CHE320 (Organic I and II with Laboratory), CHE403 (basic Physical Chemistry). The Chemistry Teacher Specialization courses include CHE 120 (Chemical Laboratory Safety), CHE201 and CHE202 (the upper level General Chemistry sequence), CHE305 (Analytical Chemistry), CHE312 (Organic I with Laboratory) and choice of one of the following: CHE320 (Organic II), CHE 330 (Biochemistry), CHE 352 (Basic Chemical Instrumentation), and CHE403 (basic Physical Chemistry). This curriculum ensures that Chemistry Education students receive a well-rounded and thorough training in the chemical sciences.

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. With these literacy skills in place, candidates are prepared to develop the reading and writing skills of students in their future classrooms.

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.

Secondary Education Field Experiences Table

Course	Field Hours
EDU 103	7 hours
EDP 260	7 hours

EDU 303	6 hours
EDU 403	3 hours
EDU 405	2 hours
SED 300	7 hours
SEC 420	57 hours
SEC 422	118 hours

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
	Diversity	Assessment	Literacy	Gap	Reflective Decision-Maker
EDP 260	A				A
EDU 103	A	K		A	E
EDU 303	K	K	K	K	A
EDU 403	A	A		A	A
ELE 421	E	E	E	E	E
SED 300	K	K	K	K	A
K – Knowledge, A – Application, E – Evaluation					

Chemistry Content Course Descriptions

CHE 120 Chemical Laboratory Safety (1). A general course in laboratory safety. It is recommended for all students seeking chemistry degrees and students in other fields involving extensive laboratory work. This course does not count for University Studies credit. Corequisite: CHE 201 or permission of instructor.

CHE 201 General College Chemistry (5). A thorough course in inorganic chemistry emphasizing atomic structure, stoichiometry, thermochemistry, the gaseous state of matter, periodic classification, nuclear chemistry, and chemical bonding. Three lectures, two hours of laboratory, and two hours of recitation per week. Prerequisites: Math ACT score of 23-36 or Math SAT score of 550-800, or MAT 140 with a grade of C or better.

CHE 202 General Chemistry and Qualitative Analysis (5). A continuation of CHE 201 emphasizing thermochemistry, solution chemistry, oxidation-reduction reactions, chemical kinetics, chemical equilibrium, acid-base chemistry, thermodynamics, electrochemistry, and other selected topics. Three lectures, two hours of laboratory, and two hours of recitation per week. Prerequisite: CHE 201.

CHE 305 Analytical Chemistry (5). Fundamental principles and techniques of volumetric and gravimetric analysis. Two lectures and two three-hour laboratory periods per week. Prerequisite: CHE 202.

CHE 312 Organic Chemistry I (5). Introduction to organic chemistry, including structure, properties, methods of preparation, and selected reactions of aliphatic and aromatic hydrocarbons and halides. Stereochemistry and basic reaction mechanisms are also included. An introduction to the theory of modern instrumental techniques (GC, IR, NMR, GC/MS) used in the identification of organic species is also taught. An introduction to the theory and practice of organic chemical laboratory procedures and manipulations which include hands-on experience with the preparation, separation, purification, and identification of typical compounds. Three hours of lecture, one hour of recitation and three and one-half hours of lab per week. Prerequisite: CHE 202.

CHE 320 Organic Chemistry II (3). A continuation of CHE 312 including similar studies of other fundamental classes of organic compounds. Three lectures per week. Prerequisite: CHE 312 with a grade of C or better.

CHE 330 Basic Biochemistry (3). A basic course surveying the chemistry and metabolism of carbohydrates, proteins, lipids and nucleic acids, and the action of vitamins, hormones and enzymes. Three lectures per week. Credit for either CHE 330 or CHE 530, but not both, can count toward a major or minor in chemistry. Prerequisite: CHE 210 or equivalent. (Spring only.)

CHE 352 Basic Chemical Instrumentation (4). An introduction to chemical instrumentation and instrumental methods of analysis, including chromatographic, optical, and electrometric techniques. Three lectures and one three-hour laboratory period per week. Prerequisite: CHE 305. (Fall only.)

CHE 403 Basic Physical Chemistry (5). Broad coverage of physical chemistry with inclusion of biological applications. Topics include gas laws, kinetic theory, states of matter, thermodynamics, solutions, chemical kinetics, and quantum theory. Designed for students in biological, medical, veterinary, and allied health fields, and those who require one semester of physical chemistry. Four lectures and three hours laboratory per week. Prerequisites: CHE 305, MAT 250, PHY 132 and 133 or 255 and 256. (Spring only.)

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. Secondary instructors 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

NSTA: National Science Teachers Association

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>	<ul style="list-style-type: none"> CHE201, CHE202 Major concepts of Chemistry (equilibrium, energetics and kinetics) are introduced and their connections with other sciences are discussed
<p>(b) Understand the central concepts of the supporting disciplines and the supporting role of science specific technology;</p>	<ul style="list-style-type: none"> All courses Connections to all supporting disciplines are

	used in the teaching of all CHE classes.
(c) Show an understanding of state and national curriculum standards and their impact on the content knowledge necessary for teaching P-12 students.	
<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>	
(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;	
(c) Design instruction and assessment strategies that confront and address naïve concepts/preconceptions.	
<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>(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>(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>	
<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>	
<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>	<ul style="list-style-type: none"> • CHE 120, and All to a smaller extent. • Safety precautions, guidelines and resources for continual learning are covered in all chemistry courses but focused on specifically in CHE 120.
<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>	
<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>	
<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>All chemistry courses stress data collection, organization and analysis both in the classroom and laboratory setting. Group work and presentations are included in both lecture and laboratory.</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>	
<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>	<p>All chemistry courses and labs stress data/information evaluation.</p>
<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>	<p>All chemistry courses and labs stress data/information evaluation.</p>
<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>	<p>Chemistry provides this through a link to the KY Lake Section of the American Chemical Society. Monthly talks, semester long projects and research opportunities in laboratories and community (“the field”).</p>
<p>(b) Engage in professional development opportunities such as conferences, research opportunities, or projects within their community.</p>	<p>Chemistry provides this through a link to the KY Lake Section of the American Chemical Society. Monthly talks, semester long projects and research opportunities in laboratories and community (“the field”).</p>

Unifying Concepts for Chemistry

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.	CHE201, CHE202, CHE305, CHE312, CHE320 and CHE403
2. Nature of scientific evidence and the use of models for explanation.	All courses (in appropriate context)
3. Measurement as a way of knowing and organizing observations of constancy and change.	CHE201, CHE202, CHE305, and CHE403
4. Evolution of natural systems and factors that result in evolution or equilibrium.	CHE201, CHE202 and CHE403
5. Interrelationships of form, function, and behaviors in living and nonliving systems.	CHE 330 (elective) and CHE 403

Science Content Requirement Analysis Tables A, B, and C for Chemistry

Table A: Chemistry

A. Core Competencies (numbers 1-13)	B: Required Courses or advising requirements
1. Fundamental structures of atoms and molecules	CHE 201 and CHE202
2. Basic principles of ionic, covalent, and metallic bonding	CHE 201, CHE202 and CHE403
3. Physical and chemical properties and classification of elements including periodicity	CHE 201 and CHE202
4. Chemical kinetics and thermodynamics	CHE403
5. Principles of electrochemistry	CHE 202 and CHE 305
6. Mole concept, stoichiometry, and laws of composition	CHE 201 and CHE 305
7. Transition elements and coordination compounds	CHE 202 and CHE 403
8. Acids and bases, oxidation-reduction chemistry, and solutions	CHE 202 and CHE 305
9. Fundamental biochemistry	CHE 330 (elective) and CHE 403
10. Functional and polyfunctional group chemistry	CHE312 CHE320
11. Environmental and atmospheric chemistry	CHE120, CHE202, CHE305
12. Fundamental processes of investigating in chemistry	CHE201, CHE202, CHE305, CHE312, CHE320 and CHE403
13. Applications of chemistry in personal and community health and environmental quality	CHE120, CHE312, CHE320, CHE403 and CHE 330 (elective)

Table B: Chemistry

B. Advanced Competencies (numbers 14-27)	B: Required Courses or advising requirements
14. Molecular orbital theory, aromaticity, metallic and ionic structures, and correlation to properties of matter	CHE312, CHE320 and CHE403
15. Superconductors and principles of metallurgy	CHE202, CHE305
16. Advanced concepts of chemical kinetics, and thermodynamics	CHE403
17. Lewis adducts and coordination compounds	CHE312 and CHE403
18. Solutions, colloids, and colligative properties	CHE202 and CHE403
19. Major biological compounds and natural products	CHE 330 (elective)
20. Solvent system concepts including non-aqueous solvents	CHE312 and CHE320
21. Chemical reactivity and molecular structure including electronic and steric effects	CHE312 and CHE320
22. Organic synthesis and organic reaction mechanisms	CHE312 and CHE320
23. Energy flow through chemical systems	CHE403
24. Issues related to chemistry including ground water pollution, disposal of plastics, and development of alternative fuels.	Che120, CHE 305
25. Historical development and perspectives in chemistry including contributions of significant figures and underrepresented groups, and the evolution of theories in chemistry	All courses (in appropriate context)
26. How to design, conduct, and report research in chemistry	CHE201, CHE202, CHE305, CHE312 and CHE403
27. Applications of chemistry and chemical technology in society, business, industry, and health fields	Che120, CHE 305

Table C: Chemistry

C. Supporting Competencies (numbers 28-47)	B: Required Courses or advising requirements
28. Biology	
29. Molecular biology	CHE 330 (elective)
30. Bioenergetics	CHE 330 (elective)
31. Ecology	CHE 330 (elective)
Earth science	
32. Geochemistry	CHE202
33. Cycles of matter	CHE202
34. Energetics of Earth systems	CHE202
Physics	
35. Energy	CHE201, CHE202 and CHE403
36. Stellar evolution	N/A
37. Properties and function of waves	CHE201, CHE202 and CHE403
38. Properties and function of motions	CHE201, CHE202 and CHE403

39.	Properties and function of forces	CHE201, CHE202 and CHE403
40.	Electricity	CHE201, CHE202, CHE305 and CHE403
41.	Magnetism	CHE201, CHE202 and CHE403
Mathematical and statistical concepts		
42.	Statistics	CHE201, CHE202, CHE305 and CHE403
43.	Use of differential equations	CHE403
44.	Calculus	CHE403

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. This program is available to candidates who seek alternative certification. To become eligible, a candidate must first be hired by a school district, all teacher education admission requirements must be met, a transcript evaluation is made, and an individualized program of courses and experiences is designed to meet certification requirements. The *Kentucky Teacher Standards* matrix demonstrates the integration of Kentucky Teacher Standards throughout secondary education coursework. Candidates' content knowledge (KTS 1) is developed in multiple chemistry courses such as CHE 120, CHE 201, CHE 202, CHE 305, CHE 312, CHE 320 and CHE 403 and evaluated by a PRAXIS exam.

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
SEC 420	K	A	K	A					K	
SEC 422	E*									
SED 300	A	K	K			K	K	A	K	
K – Knowledge, A – Application, E – Evaluation, * - Signature Assignment										

- KTS 1: Content Knowledge
- KTS 2: Design Instruction
- KTS 3: Learning Climate
- KTS 4: Implements Instruction
- KTS 5: Assessment
- KTS 6: Technology
- KTS 7: Reflection
- KTS 8: Collaboration
- KTS 9: Professional Development

- KTS 10: Leadership

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. Chemistry 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)
Allenbaugh, Rachel	Ph.D. University of North Carolina-Chapel Hill	Faculty	Assistant Professor	Reviewer for <i>Inorganica Chimica Acta</i> and <i>Liquid Crystals</i> Publications: (a) <i>Liq. Cryst.</i> 2015, 42(1), 113-118. (b) <i>Chem. Educ. Res. Pract.</i> 2014, 15, 620-627. (c) <i>Liq. Cryst.</i> 2013, 40(6), 783-786.	Full-time to Institution, Part-time to Unit, Part-time to Program
Cox, James Ricky	Ph.D., University of Tennessee at Knoxville	Faculty	Professor	Chair, National Advisory Board for the Teaching Professor Technology Conference Editorial Board, Biochemistry and Molecular Biology Education Publication: <i>J. Chem. Educ.</i> 2013, 90, 1476-1478.	Full-time to Institution, Part-time to Unit, Part-time to Program
Fannin, Harry	Ph.D., University of Cincinnati	Chair, Chemistry Department, Faculty	Professor	Presentation: (a), 246th National Meeting of the American Chemical Society (2013) (b) University of Dayton Stander Symposium, (2013)	Full-time to Institution, Part-time to Unit, Part-time to Program
Fawzy, Wafaa	Ph.D. Michigan State University	Faculty	Associate Professor	Editorial board (a) Journal of Chemistry of Physical Chemistry (b) E-Journal of Chemistry	Full-time to Institution, Part-time to Unit, Part-time to Program

Johnson, Daniel	Ph.D. University of Kentucky	Faculty	Associate Professor	Publications (a) Nat. Chemistry, 2012, 4, 338-330. (b) Mater. chem. Phys. 2012, 132, 239-243.	Full-time to Institution, Part-time to Unit, Part-time to Program
Loganathan, Bommanna	Ph.D., Annamalai University, Porto Novo, India Ph.D., , Ehime University, Matsuyama, Japan	Faculty	Professor	Named a Fellow of the American Chemical Society (2015) Book Chapters (a) Reference Module in Biomedical Research, Elsevier Publications. (2014) (b) biomarkers in Toxicology, Oxford: Academic Press (2014) Journal: Organohalogen Compounds, 76, 1581-1584 (2014)	Full-time to Institution, Part-time to Unit, Part-time to Program
Brubaker, Beth	M.S. University of Kentucky	Lab/Safety/Waste Coordinator	Staff	Active Member of local ACS Section (Division: Chemical Health and Safety) and NAOSMM Association	Full-time to Institution, Part-time to Unit, Part-time to Program
McCreary, Terry	Ph.D., Virginia Tech University	Faculty	Professor	Book: Co-author <i>Chemistry for Changing Times</i> 13th ed., (2012) Book Co-author <i>Chemistry for Changing Times</i> 14th ed.(2016)	Full-time to Institution, Part-time to Unit, Part-time to Program
Miller, Kevin	Ph.D. University of Notre Dame	Faculty	Associate Professor	Publications (a) Journal of Physical Chemistry, Part B, (2014)118, 9944-9951 (b) Polymer, 55 (2014) 3320-3329 (c) Journal of Physical Organic Chemistry, 2014, 27 2-9	Full-time to Institution, Part-time to Unit, Part-time to Program

Ratliff, Judy	Ph.D., University of Kentucky	Faculty	Associate Professor	Reviewer: <i>J. Chem. Ed.</i> Reviewer and content checker: John Wiley and Sons WKEC Science Leadership Network Content Consultant (2013-2015)	Full-time to Institution, Part-time to Unit, Part- time to Program
Revell, Kevin	Ph.D.- University of South Florida	Associate Dean, JCSET, Faculty	Associate Professor	Publication: (a) Letters in Org. Chem. (2015) (b) J. Chem. Educ., (2014) Book: <i>Introductory Chemistry</i> , 1st Ed. (In process) Senior editor, flippedchemistry.com	Full-time to Institution, Part-time to Unit, Part- time to Program
Volp, Robert	PhD., University of Wisconsin, Madison	Faculty	Associate Professor	Radiation Safety Committee Member (2011-current)	Full-time to Institution, Part-time to Unit, Part- time to Program

Education Faculty

NAME	HIGHEST DEGREE, FIELD, & UNIVERSITY	ASSIGNMENT	FACULTY RANK	CERTIFICATIONS, EXPERIENCE, SCHOLARSHIP, LEADERSHIP IN PROFESSIONAL ASSOCIATIONS, AND SERVICE	STATUS
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"> • <i>Educational Testing Services, Assessment Specialist – 10 years, Middle School Science – 6 years, High School Science – 3 years</i> • <i>Allen, D. (August 2015). Project Learning Tree survey of use. Annual conference of the Japanese Society of Environmental Education, Nagoya, Japan.</i> • <i>Allen, D. (October 2014). Perceptions of environmental education from across a university campus. Annual conference of the North American</i> 	Full-time to institution Part-time to unit Part-time to program

				<p><i>Association for Environmental Education. Ottawa, Ontario, Canada.</i></p> <ul style="list-style-type: none"> • <i>Waite, D., & Allen, D. (2003). Corruption and abuse of power in educational administration. Urban Review, 35(4), 281-296</i> 	
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"> • <i>High School English – 2 years, Full-Time Academic Advisor, University of Cincinnati – 5 years, University Appointments, Education – 10 years.</i> • <i>Dixson, 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.</i> • <i>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. Dixson (Eds.). Is the post-racial still racial?: Understanding the relationship between race and education. NSSE Yearbook, Teachers College Record.</i> • <i>National Council of Teachers for English Assembly of Research - Program Reviewer and Planning Committee, 2015 (New Orleans, Louisiana)</i> 	Full-time to institution Part-time to unit Part-time to program
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"> • <i>Book: (2004) Case study analysis in the classroom</i> • <i>Presentation: (2006) AERA</i> • <i>BOE Team member: (2005-present)</i> 	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"> • <i>Certifications & Experience: KY Teaching Lic., Middle school Spanish, Science, and Math, endorsement for teaching early elementary, DPP, School Administration. 10 years experience – middle school.</i> • <i>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</i> • <i>KY Department of Education, Math & Science Leadership Networks</i> 	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	First Book, Chapter Advisor - Monthly distribution of new books to low socioeconomic students in public schools, KEA - SP, Chapter Advisor - Global Education Outreach Committee, Chairperson	Full-time to institution Part-time to unit Part-time to program
Stormer, Kimberly	Ph.D. Instructional Leadership Academic and Curriculum University of Oklahoma	Middle Level Education Program Coordinator, Teaches middle level education courses.	Assistant Professor	Taught for 7.5 years in large urban school district; and Worked as a School Improvement Specialist for the Oklahoma State Department of Education Diversity Chair Kentucky Council Teachers of English Advisor Murray State Middle Level Association	Full-time to institution Part-time to unit 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	Associate Professor	Taught math and science in public middle schools; and Education consultant to area schools	Full-time to institution Part-time to unit Part-time to program

		education courses and graduate courses across multiple levels		President of Kentucky Association of Teacher Educators	
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 in Reading and Writing	REA 407 at the Paducah Campus	Adjunct Instructor	6 th grade Reading and Writing at Lone Oak Middle School Certified Elementary Education Certified Reading and Writing Literacy Specialist K-12 Super Saturdays Instructor	Part-time to institution 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 ensure current guidesheets are available for advisors and students (<http://coekate.murraystate.edu/coecms/ncate/manager/advsheet>). Guidesheets are used by academic advisors, students, and faculty to ensure consistency and clarity of program requirements.

Revised 1/08

MURRAY STATE UNIVERSITY
BACHELOR OF SCIENCE DEGREE
CHEMISTRY TEACHER CERTIFICATION PROGRAM
GRADES 8 THROUGH 12
2005 – 2007 Undergraduate Bulletin

Student's Name: _____ Date: _____

<u>University Studies – 46 hours</u>			
	COURSE DESCRIPTION	HOURS	SEMESTER
I.	<u>Communication and Basic Skills – 9 hours</u>		
	3	_____	_____
	COM 161 Introduction to Public Speaking	3	_____
		_____	_____

II.	<u>Science and Mathematics – 13 hours</u>			
	MAT 250 Calculus and Analytic Geometry	5	_____	_____
	PHY 130/131 General Physics I	4	_____	_____
	PHY 132/133 General Physics II	4	_____	_____
III.	<u>Humanities and Fine Arts – 12 hours</u>			
	HUM 211 The Western Humanities Tradition			
	*Elective _____	3	_____	_____
IV.	<u>Social Sciences – 9 hours</u>			
		3	_____	_____
		3	_____	_____
		3	_____	_____
V.	<u>*University Studies Electives – 9 hours</u>			
	CSC 199 Introduction to Information Technology	3	_____	_____
	EDU 103 Introduction to Education	3	_____	_____
	Elective _____	3	_____	_____
VI.	<u>Professional Education – 35 hours</u>			
		3	_____	_____
	EDP 260 Psychology of Human Development	3	_____	_____
	COM 372 Communication in Educ Environment	3	_____	_____
	SED 300 Ed. Of Students w/Dis: A Collab. Exp.	3	_____	_____
	EDU 303 or CHE 303 Strategies of Teaching	3	_____	_____
	EDU 403 Structures & Foundations of Education	2	_____	_____
	SEC 420 Practicum in Secondary Schools	2	_____	_____
	EDU 405 Evaluation & Measurement in Education	2	_____	_____
	SEC 421 Student Teaching in the Secondary Sch.	14	_____	_____

Required Courses – 31 hours

CHE 100T Transitions	1	_____	_____
CHE 120 Chemical Laboratory Safety	1	_____	_____
CHE 201 General College Chemistry	5	_____	_____
CHE 202 General Chemistry and Qualitative Anal.	5	_____	_____
CHE 305 Analytical Chemistry I	5	_____	_____
CHE 312 Organic Chemistry I	5	_____	_____
CHE 320 Organic Chemistry II	3	_____	_____
CHE 403 Basic Physical Chemistry	5	_____	_____

Required Limited Electives – 3 hours (select 1 from the following)

CHE 330 Basic Biochemistry	3	_____	_____
CHE 352 Basic Chemical Instrumentation	3	_____	_____
CHE 504 Fundamentals of Toxicology	3	_____	_____
CHE 513 Environmental Chemistry	3	_____	_____

*NOTE: Check Undergraduate Bulletin for approved electives.

Chemistry Teaching Specialization*

The teaching specialization in chemistry is a path to Secondary Certification in Chemistry, designed to accompany certification in another science content area. (All College of Education secondary certification course requirements must be met.) The teaching specialization in chemistry meets and exceeds Murray State University's requirements for a minor in Chemistry.

Note: Even though this program exceeds Murray State University's requirements for a chemistry minor, in order for a Chemistry Minor to appear on your transcript, a minor must be declared, and all residential and graduation requirements must be met.

Total Hours Required for Chemistry Teaching Specialization..... 25 hrs

CHE 120 Chemical Laboratory Safety (1)
CHE 201 General College Chemistry (5)
CHE 202 General Chemistry & Qual. Analysis (5)
CHE 305 Analytical Chemistry I (5)
CHE 312 Organic Chemistry I (5)

Required Limited Elective (3) - CHE course selected from the following:

CHE 320 Organic Chemistry II (3)
CHE 352 Basic Chemical Instrumentation (3)
CHE 330 Basic Biochemistry (3)
CHE 403 Basic Physical Chemistry (5)

*Requirements for teacher certification are established by the Kentucky Education Professional Standards Board. Students are cautioned that changes in these requirements may occur. Therefore, for the most current information, students should check with an advisor in the College of Education.

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.

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.

PRAXIS TEST:

The following scores on the PRAXIS II Exams are required to be eligible for a teaching certificate:

Chemistry: Content Knowledge (0245) – Passing Score of 147

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

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. These may be accessed at <http://coekate.murraystate.edu/coecms/ncate/manager/syllabi/>.

EDUCATION CORE AND METHODS COURSES**EDU 103****EDU 303****EDP 260****SED 300****EDU 403****EDU 405****SEC 420****CHEMISTRY METHODS COURSE****CHE 303****CHEMISTRY CONTENT COURSES****CHE 201****CHE 202****CHE 312**