NEW COURSE FORM

1.	**General Information.**						
a.	Submitted by the College of:	Education			Today's Date:	02/22/2011	
b.	Department/Division:	Science, Technology, Engineering, and Mathematics (STEM) Education					
c.	Contact person name:	Margaret Mohr-Schroeder	Email:	m.mohr@uky.edu	Phone:	257-3073	
d.	Requested Effective Date:	☒ Semester following approval	OR	☐ Specific Term/Year[1] :	_____		
2.	**Designation and Description of Proposed Course.**						
a.	Prefix and Number:	SEM 422					
b.	Full Title:	STEM Education Methods II					
c.	Transcript Title (if full title is more than 40 characters):	STEM Ed Methods II					
d.	To be Cross-Listed[2] with (Prefix and Number):	_____					
e.	Courses must be described by at least one of the meeting patterns below. Include number of actual contact hours[3] for each meeting pattern type.						
	2 Lecture	_____ Laboratory[1]	_____ Recitation	_____ Discussion	_____ Indep. Study		
	_____ Clinical	_____ Colloquium	10 Practicum	_____ Research	_____ Residency		
	_____ Seminar	_____ Studio	_____ Other – Please explain:	_____			
f.	Identify a grading system:	☒ Letter (A, B, C, etc.)	☐ Pass/Fail				
g.	Number of credits:	3					
h.	Is this course repeatable for additional credit?				YES ☐	NO ☒	
	If YES:	Maximum number of credit hours:	_____				
	If YES:	Will this course allow multiple registrations during the same semester?			YES ☐	NO ☒	
i.	Course Description for Bulletin:	This course, the second in a two course series, is intended to further develop the practical skills needed to develop effective STEM Education teachers in the secondary classroom. Students will build upon the knowledge and experience they gained in SEM 421 by delving deeper into students' content area(s) through field experiences, implementation of a variety of instructional materials, and development of curricula appropriate for teaching STEM Education at the secondary level. Students are encouraged to be creative and reflective in developing, implementing, and evaluating practices associated with teaching STEM concepts and skills. A strong emphasis is placed upon helping students to develop an understanding of the processes of inquiry teaching, the processes of science and mathematics, as well as a deep conceptual understanding of their respective content area(s). This is part II of a two course sequence. This course requires a minimum of 100 hours of observation.					

[1] Courses are typically made effective for the semester following approval. No course will be made effective until all approvals are received.

[2] The chair of the cross-listing department must sign off on the Signature Routing Log.

[3] In general, undergraduate courses are developed on the principle that one semester hour of credit represents one hour of classroom meeting per week for a semester, exclusive of any laboratory meeting. Laboratory meeting, generally, represents at least two hours per week for a semester for one credit hour. (from *SR 5.2.1*)

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j.	Prerequisites, if any:	SEM 421 and admission into the STEM PLUS Program.		
k.	Will this course also be offered through Distance Learning?		YES[4] ☐	NO ☒
l.	Supplementary teaching component, if any:	☐ Community-Based Experience	☐ Service Learning	☐ Both
3.	**Will this course be taught off campus?**		YES ☐	NO ☒
4.	**Frequency of Course Offering.**			
a.	Course will be offered (check all that apply):	☒ Fall	☒ Spring	☐ Summer
b.	Will the course be offered every year?		YES ☒	NO ☐
	If NO, explain:	_____		
5.	**Are facilities and personnel necessary for the proposed new course available?**		YES ☒	NO ☐
	If NO, explain:	_____		
6.	**What enrollment (per section per semester) may reasonably be expected?**	20		
7.	**Anticipated Student Demand.**			
a.	Will this course serve students primarily within the degree program?		YES ☒	NO ☐
b.	Will it be of interest to a significant number of students outside the degree pgm?		YES ☒	NO ☐
	If YES, explain:	Students who add the STEM Education major will also be involved in this course (Colleges of Arts and Sciences and Engineering students).		
8.	**Check the category most applicable to this course:**			
	☐ Traditional – Offered in Corresponding Departments at Universities Elsewhere			
	☒ Relatively New – Now Being Widely Established			
	☐ Not Yet Found in Many (or Any) Other Universities			
9.	**Course Relationship to Program(s).**			
a.	Is this course part of a proposed new program?		YES ☒	NO ☐
	If YES, name the proposed new program:	STEM Education Major		
b.	Will this course be a new requirement[5] for ANY program?		YES ☒	NO ☐
	If YES[5], list affected programs:	STEM Education Major and BSEd in STEM Education Program.		
10.	**Information to be Placed on Syllabus.**			
a.	Is the course 400G or 500?		YES ☐	NO ☒
	If YES, the *differentiation for undergraduate and graduate students must be included* in the information required in ***10.b***. You must include: (i) identification of additional assignments by the graduate students; and/or (ii) establishment of different grading criteria in the course for graduate students. (See *SR 3.1.4*.)			
b.	☒	The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-		

[4] You must *also* submit the Distance Learning Form in order for the proposed course to be considered for DL delivery.
[5] In order to change a program, a program change form must also be submitted.

		level grading differentiation if applicable, from ***10.a*** above) are attached.

NEW COURSE FORM

Signature Routing Log

General Information:

Course Prefix and Number: SEM 422

Proposal Contact Person Name: Margaret Mohr-Schroeder Phone: 257-3073 Email: m.mohr@uky.edu

INSTRUCTIONS:

Identify the groups or individuals reviewing the proposal; note the date of approval; offer a contact person for each entry; and obtain signature of person authorized to report approval.

Internal College Approvals and Course Cross-listing Approvals:

Reviewing Group	Date Approved	Contact Person (name/phone/email)	Signature
STEM Education	02/22/2011	Jennifer Wilhelm / 257-1291 / jennifer.wilhelm@uky.edu	
C&C committee	4/12/11	Doug Smith / 7-1824 / dcsmit1@uky.edu	
College of Ed.	4/19/11	Steve Parker / 7-5443 / sparkol@uky.edu	
		/ /	
		/ /	

External-to-College Approvals:

Council	Date Approved	Signature	Approval of Revision[6]
Undergraduate Council	11/8/2011	Sharon Gill	
Graduate Council			
Health Care Colleges Council			
Senate Council Approval		University Senate Approval	

Comments:

The Board of Trustees approved the Department of Science, Technology, Engineering, and Mathematics (STEM) Education on February 22, 2011. The department will fiscally begin on July 1, 2011.

[6] Councils use this space to indicate approval of revisions made subsequent to that council's approval, if deemed necessary by the revising council.

Context of SEM 421 and 422

SEM 421 and 422 together make up a two course methods sequence STEM PLUS students will take for their STEM Education major.

SEM 421 is a beginning methods course in which students of all STEM content areas will be joined together for a look at secondary schools from a transdisciplinary perspective. It is a course meant to help beginning teachers build a theoretical background and develop practical skills needed to be an effective secondary classroom teacher. There is a very strong emphasis in this course on immersing students in and helping them to develop a deep understanding of the processes of inquiry teaching while continuing to develop a deep conceptual understanding of their respective content area(s).

SEM 421 is the second course in the methods sequence. It is meant to build upon the knowledge and experience gained in SEM 421 by delving deeper into students' respective content area(s). This course will be sectioned out on an as needed basis according to our student population. For example, we will being teaching this course with a mathematics section and a science section. As our science numbers grow, we will likely have a life sciences section and a physical sciences section. To help encourage more dually certified students, we do plan to offer a mathematics and physics section.

The attached syllabus for SEM 422 provides the topics and assessments that will be required of all sections. The readings and texts found in this syllabus example are specific to mathematics in order to help the reader see the context of the course easier.

SEM 422: STEM Education Methods II
Syllabus

"Research and Reflection for Learning and Leading"

Instructor:	Dr. Margaret Mohr-Schroeder or Dr. Jana Bouwma-Gearhart
Office Location	105C TEB
Phone Number	257.3073
Email	m.mohr@uky.edu
Virtual Office Hours	Arranged individually through email; Telesupervision and Skype access also available
Technological Requirements	Computer with internet access or access to UK computer facilities. Access to digital video recording devices (digital camera, digital video recorder, laptop webcams)
For Technological assistance	Contact TASC at http://www.uky.edu/TASC or call 859.257.8272 Contact Information Technology Customer Service Center http://www.uky.edu/UKIT or 859.257.1300
Technical Complaints	Contact the College of Education Instructional Technology Center at 859.257.7967 or contact Information Technology Customer Service Center http://www.uky.edu/UKIT or 859.257.1300
Preferred method for contacting instructor	Email or Blackboard
Anticipated Response Time	2 days
Information on Distance Learning Library Service	http://www.uky.edu/Libraries/DLLS
DL Librarian	Carla Cantagallo, DL Librarian; local 859.257.0500 ext 2171 Long distance: 800.828.0439, option 6 dllservice@email.uky.edu
DL Interlibrary Loan Service	http://www.uky.edu/Libraries/libpage.php?lweb_ide=253&llib_id16
Course Website:	

Course Description

This course, the second in a two course series, is intended to further develop the practical skills needed to develop effective STEM Education teachers in the secondary classroom. Students will build upon the knowledge and experience they gained in SEM 421 by delving deeper into students' content area(s) through field experiences, implementation of a variety of instructional materials, and development of curricula appropriate for teaching STEM Education at the secondary level. Students are encouraged to be creative and reflective in developing, implementing, and evaluating practices associated with teaching STEM concepts and skills. A

strong emphasis is placed upon helping students to develop an understanding of the processes of inquiry teaching, the processes of science and mathematics, as well as a deep conceptual understanding of their respective content area(s). This is part II of a two course sequence. This course requires a minimum of 100 hours of observation.

Prerequisite:
SEM 421 and admission into the STEM PLUS Program.

UK College of Education Professional Themes
This course will address the four themes of the conceptual framework for the UK professional education unit: ***research, reflection, learning,*** and ***leading***. Students will be given the opportunity to review, analyze, discuss, and apply ***research*** from diverse perspectives in education, including professional scholarship and practitioner inquiry, in order to reflect on their own practices as they study, observe, and practice in P-12 school and university classrooms. ***Reflection*** will also be integrated into students' learning opportunities through the production of written essays and analyses of observation and teaching experiences to help students take advantage of the analytical and problem-solving skills that comprise critical professional reflection on one's own teaching. This course emphasizes the commitment of the professional education unit to ensure that its graduates move into their professional lives equipped for life-long ***learning*** as educators who will be active in ***leading*** colleagues in their schools, districts, and professional organizations. The ultimate goal in addressing these four themes is to produce teacher leaders who work together to improve student learning among diverse populations and improve education in Kentucky and beyond.

Course Learning Targets, Outcomes, and Assessments
This course has been designed to provide students with opportunities to acquire skills, knowledge, conceptual understanding, classroom experience, and practice teaching in their preferred content area(s). By the end of this course, students will have gained the following:

Learning Target/Outcome	Assessment
Connects content to life experiences of students	Reflections (Formative) Unit Plan (Summative) Bulletin Board (Summative)
Self-assess dispositions and standards related to effective teaching and develop personal goals for growth • **Characteristics of Highly Effective Mathematics Teaching (http://www.education.ky.gov/KDE/Instructional+Resources/Highly+Effective+Teaching+and+Learning/Characteristics+of+Highly+Effective+Mathematics+Teaching+and+Learning.htm)**	Self-assessment (Formative)

• **Kentucky Teacher (Initial) Standards (http://www.kyepsb.net/documents/EduPrep/Kentuckyteacherstandards.doc)** • **Appropriate content area standards**	
Participate in, observe, and reflect upon a variety of education settings.	100 hours of field experience (Formative) Reflections (Formative)
Guides students to understand content from various perspectives	Reflections (Formative) Field Experience Unit Plan (Summative)
Uses contextual data to design instruction relevant to students	Field Experience Unit Plan (Summative)
Plans assessments to guide instruction and measuring learning objectives	Unit Plan (Summative) Field Experience
Plans instructional strategies and activities that facilitate multiple levels of learning	Field Experience Unit Plan (Summative)
Communicates high expectations	Field Experience Unit Plan (Summative) Classroom website (Formative)
Establishes a positive learning environment	Bulletin Board (Formative) Field Experience Reflections (Formative)
Implements instruction based on diverse student needs and assessment data	Field Experience Reflections (Formative) Unit Plan (Summative)
Uses time effectively	Unit Plan (Summative) Field Experience Reflections (Formative
Uses space and materials effectively	Unit Plan (Summative) Field Experience Reflections (Formative)
Implements and manages instruction in ways that facilitate higher order thinking	Unit Plan (Summative) Field Experience Reflections (Formative)
Uses formative assessments	Field Experience Reflections (Formative) Unit Plan (Summative)
Uses Summative Assessments	Field Experience Reflections (Formative) Unit Plan (Summative)
Communicates learning results to parents	Field Experience Reflections (Formative) Unit Plan (Summative)

	Classroom website (Formative
Allows opportunity for student self-assessment	Field Experience Reflections (Formative) Unit Plan (Summative)
Uses available technology to design and plan instruction	Field Experience Unit Plan (Summative) Reflections (Formative)
Integrates student use of available technology into instruction	Field Experience Unit Plan (Summative) Reflections (Formative)
Uses available technology to assess and communicate student learning	Field Experience Unit Plan (Summative) Reflections (Formative) Classroom website (Formative)
Demonstrates ethical use of technology	Field Experience Unit Plan (Summative) Reflections (Formative) Classroom website (Formative)
Uses data to reflect on and evaluate instructional practice	Field Experience Analysis of Assessment (Summative) Reflections (Formative)
Uses data to reflect on and identify areas for professional growth	Field Experience Reflections (Formative) Self-Assessment (Formative)
Implements planned activities that enhance student learning and engage all parties	Unit Plan (Summative) Reflections (Formative) Field Experience
Self assesses performance relative to Kentucky Teacher's Standards	Self Assessment (Formative)
Identifies priorities for professional development based on data from self-assessment, student performance and feedback from colleagues	Self Assessment (Formative) Professional Development
Shows evidence of professional growth and reflection on the identified priority areas and impact on instructional effectiveness and student learning	Professional Development Reflection (Formative)
Identifies leadership opportunities that enhance student learning and/or professional environment of the school	Professional Development Reflection (Formative)

Course Delivery

This proposed course is designed as a **face-to-face course with a minimum of 100 hours of observation.** During this time, students will participate in class discussions and present projects. Where an online discussion is utilized, discussions will take place using a Learning Management System such as Blackboard or NING (www.ning.com).

Senate Bill 1 Initiatives

This course will provide students an opportunity to advance their knowledge and mastery of the "tools" associated with Kentucky education reform, including the Kentucky Core Academic Standards (as they become available), assessment literacy – assessment *for* learning, and the new accountability system as it becomes available. As students carry out projects and complete assignments that involve instructional activities for P-12 students in Kentucky schools, they will address one or more components of the Senate Bill 1 initiatives.

Required Texts

National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics.* Reston, VA: NCTM. Or you may use your NCTM membership to access the standards online for free.

National Science Teachers Association Standards

Framework for Science Education Standards (as they become available).

Articles Assigned (Available online)

Brahier, D. J. (2007). *Teaching secondary and middle school mathematics* (3rd edition). Boston: Allyn and Bacon.

Malloy, C. E. (Ed.) (2009). *Mathematics for every student: Responding to diversity, grades 9-12.* Reston, VA: National Council of Teachers of Mathematics.

Recommended Texts

Donovan, M. S., & Bransford, J. D. (eds.). (2005). *How students learn.* Washington, DC: The National Academies Press.

Wong, H. K., & Wong, R. T. (2001). *The first days of school: How to be an effective teacher*. Harry K. Wong Publications.

Grades

Grades will be assigned as follows:

90%-100% A; 80%-89% B; 70%-79% C; 60-69% D; <60% E

Completeness and Promptness

Only assignments submitted complete and on time will considered for full credit. **All assignments must be typed unless otherwise instructed.**

Assignment Format

All assignments will be submitted via **SharePoint/coursewebsite** unless otherwise indicated or stated. It is highly recommended you save all your work electronically and also a hardcopy for your records before turning it in. The following format is required for every assignment

submitted. Deviating from the format may result in reduced points, returned paper, or rejection of the assignment completely. All submissions must be typed, in 12-point Times New Roman or Garamond or similar font, with 1" margins all the way around. A **cover page** specifying the assignment, due date, instructor's name, and student's name must be included. Please name your files as follows: **lastname.assignment name** (example: schroeder.article2). Assignments are **due by 11pm the day they are due** unless otherwise noted by the instructor.

Late Assignments
Only assignments submitted complete and on time will be considered for full credit. Any assignments turned more than one week late will receive zero points.

Attendance
Attendance of individuals in the class is required, and university rules regarding absences will be followed. Exchange of ideas is essential for the learning that occurs in this class. In most class meetings, students work in pairs and/or in groups. The absence of one individual affects the performance of all persons working in the group. If you are absent, it is each student's responsibility to make up the work and provide evidence that the absence was excused. Without this evidence, the absence will be considered unexcused. Two tardies, whether arriving late or leaving early, equals one unexcused absence. I reserve the right to lower your final grade one letter grade your grade for each unexcused absence.

Excused Absences: S.R. 5.2.4.2 defines the following as acceptable reasons for excused absences:

1) serious illness;
2) illness or death of family member;
3) University-related trips;
4) major religious holidays;
5) other circumstances you find to be "reasonable cause for nonattendance."

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day for adding a class. Information regarding dates of major religious holidays may be obtained through the religious liaison, Mr. Jake Karnes (257-2754).

In the case of an excused absence, it is the student's responsibility to inform the instructor of the absence, preferably in advance, but no later than one week after it. Opportunities for make-up will be discussed then.

Participation and Professionalism
The STEM PLUS program is a teacher preparation program, and as such expects you to work and to transition into the teaching profession. This entails both mature personal behavior and professional conduct based on the College of Education's Functional Skills and Dispositions (see Student Handbook at http://education.uky.edu/AcadServ/content/ student-handbook-education-programs). These include 1) communicating appropriately and effectively, 2)

demonstrating constructive attitudes, 3) demonstrating the ability to conceptualize key content, 4) interacting appropriately with diverse groups in educational settings (including colleagues and students), and 5) demonstrating a commitment to professional ethics and behavior.

You are expected to be on-time, present at classes and at all school observations related to this course and in the program overall. If you must be absent for a legitimate reason it is **your responsibility** to contact instructors/supervisors and make up any missing class work. Since class work is often in groups or pairs, the absence of one individual affects the total class experience. You must provide evidence that your absence is excused. Two tardies equals one unexcused absence. S.R. 5.2.4.2. defines acceptable reasons for excused absences as "serious illness, illness or death of a family member, university related trips, major religious holidays or other circumstances you find to be reasonable cause for nonattendance." Decisions on the acceptance of late work are at the discretion of the instructor.

You are expected to be an active participant in this class, and to demonstrate participation in a variety of ways in accordance with a student seeking to become a professional teacher. Participation may include: Contributing in discussions, asking constructive questions or responding to peers or instructor, demonstrating active listening (taking notes, paying attention, etc.), and communicating with the instructor via office meetings and/or email. Attendance, participation, and professionalism will be assessed holistically based on the above criteria, and will be used to determine the outcome of borderline grades. In cases of extreme or frequent misconduct, the instructor reserves the right to dismiss a student from class and notify the department and college for potential disciplinary action.

In relation to participation and expectations for student behavior, cell phones need to be kept off during class meetings. If you are on call for emergency reasons please alert the instructor. Note taking and in-class work via laptop computers is acceptable. Social networking, writing e-mails, texting, or reading sources unrelated to class content is unacceptable.

Students who fail to attend class on a regular basis, participate as expected, and/or conduct themselves professionally or ethically will be required to meet with the instructor to set improvement goals, and may face failure or expulsion based on due process policies set by the College of Education and Teacher Education Preparation program.
You are encouraged to communicate regularly with the instructor so that you are aware of your standing. This may be accomplished via face-face meetings during office hours and via email.

Field Experience
The schools you will be working and learning in count on you to behave professionally and ethically. If an emergency prevents or delays your attendance at school, you must notify the school, all cooperating teachers, and Dr. Schroeder or Dr. Bouwma-Gearhart. Absences must be made up before the end of the fall semester. Failure to make up absences will result in an incomplete grade for the course.

Students with Special Needs
The American with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protections for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides a reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please notify your instructor and contact the Disability Resource Center (Mr. Jake Karnes, jkarnes@uky.edu) 257-2754, room 2 Alumni Gym.

The course will be conducted with openness and respect to all individuals' points of view and experience. The activities and discussions will not tolerate discrimination or prejudice toward any person or group's religion, ethnicity, disability, gender, or sexual orientation.

Ethics Statement
This course and its participants will not tolerate discrimination, violence, or vandalism. STEM Education is an open and affirming department for all people, including those who are subjected to racial profiling, hate crimes, heterosexism, and violence. We insist that appropriate action be taken against those who perpetrate discrimination, violence, or vandalism. The University of Kentucky is an Affirmative Action and Equal Opportunity institution and affirms its dedication to non-discrimination on the basis or race, color, religion, gender, age, sexual orientation, domestic partner status, national origin, or disability in employment, programs, and services. Our commitment to non-discrimination and affirmation action embraces the entire university community including faculty, staff, and students.

All students are expected to conduct themselves in an appropriate and ethical manner during their UK classes and related field placements, as befitting students, future teachers, and ambassadors for the University of Kentucky. Any unethical behavior in class or during your field placements may result in failure for the course and/or expulsion from the STEM PLUS program, determined on a case-by-case basis. Faculty will follow all university due process procedures in cases of academic or ethical misconduct. Please consult Dr. Schroeder or Dr. Bouwma-Gearhart if you have questions regarding this requirement.

Statement on Plagiarism
All materials generated for this class (which may include but are not limited to syllabi and in-class materials) are copyrighted. You do not have the right to copy such materials unless the professor or assistant expressly grants permission. As commonly defined, plagiarism consists of passing off as one's own the ideas, words, writing, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have permission of that person. Plagiarism is one of the worst academic violations, for the plagiarist destroys trust among others.

Legal Action
STEM PLUS students charged with violations of criminal law will be suspended immediately from the Teacher Education Program and/or field experiences until the case is settled. Students are responsible for reporting such charges to the Program Faculty Chair.

Commitment to Diversity & Equity

The STEM PLUS Program is committed to: making diversity central to policies, decisions, and practices; evaluating progress toward diversity in the program; disseminating results widely; and using these results to strengthen diversity for the Commonwealth.

Equitable access to high quality mathematics instruction in Kentucky's secondary schools is directly and indirectly affected by UK's STEM PLUS program's beliefs in and support for social diversity in schools. Moreover, the Commonwealth is directly affected by the ability of its youth to acquire high levels of skill in mathematics that can then be used by them as citizens to enhance their communities and participate in the state's ongoing progress and prosperity in local, regional, national, and global contexts. Therefore, it is essential for our teacher candidates to understand issues related to social diversity and make a commitment to value diversity as they engaged in teaching, research, reflection, learning, and leadership. By valuing diversity, our program is committed to enabling and empowering all people in educational contexts regardless of their race, ethnicity, gender, social class, sexual orientation, domestic partner status, and so forth.

Students who speak a first language other than English or have related cultural differences must not face special barriers to learning mathematics, science, and computer science. Every student's cultural heritage should be accepted and celebrated for the diversity that it brings to the learning environment. Expanded opportunities should be available to English language learners (ELL students) who need them to develop mathematical and scientific understanding and proficiency. Mathematics, Science, and Computer Science teachers should have knowledge of content and pedagogy that support ELL students, including an understanding of the role of the first language. (NCTM, 2008)

Excellence in mathematics, science, and computer science education rests on equity—high expectations, respect, understanding, and strong support for all students. Policies, practices, attitudes, and beliefs related to mathematics teaching and learning must be assessed continually to ensure that all students have equal access to the resources with the greatest potential to promote learning. A culture of equity maximizes the learning potential of all students. (NCTM, 2008)

Commitment to Addressing the Achievement Gap

The UK STEM PLUS Program aligns itself with the positions of the National Council of Teachers of Mathematics regarding cultural and linguistic diversity in STEM education. The program seeks to underscore that cultural and linguistic diversity should be treated as integral components of STEM education, and that the failure to accommodate such diversity in curriculum and instruction lies at the heart of disparities in mathematics achievement between Caucasian and Minority racial populations—a phenomenon popularly referred to as "the achievement gap." The NCTM (2005) offers the following belief statement that underscores our program's commitment to diversity in education:

> Every student should have equitable and optimal opportunities to learn mathematics free from bias—intentional or unintentional—based on race, gender, socioeconomic status, or language. In order to close the achievement gap, all students need the opportunity to learn challenging mathematics from a well-qualified teacher who will make connections to the background, needs, and cultures of all learners. (¶ 2)

Commitment to Technology

The Initial Preparation Certification Program in STEM Education is committed to teaching candidates so they use technology as a personal and professional tool. Our program is guided by NCATE standards and EPSB Kentucky Teacher Standards as they relate to technology. Candidates are required to use technology for a majority of their classes. Candidates use technology for class assignments, lesson plan design and preparation, class presentations, record keeping, and data analysis. Candidates are required to successfully complete course work focusing on using technology. Our candidates are required to communicate via electronic mail, use list serves, access the Internet and online databases, and use digital texts and modes for research projects and presentations. Our candidates use Microsoft Word, Excel, Access, and PowerPoint. They are given multiple opportunities during student teaching to videotape their teaching for use in self-analysis toward professional development. Our program offers candidates access to "smart" classrooms and technology labs in order to further facilitate their use of technology.

In addition to its alignment with NCATE standards, EPSB themes, and UK College of Education Technology Standards, the UK STEM PLUS Program aligns itself with the position of the National Council of Teachers of Mathematics regarding the use of technology and media in STEM education. NCTM's (2008) statements underscore our program's commitment to technology as follows:

> Technology is an essential tool for learning mathematics in the 21st century, and all schools must ensure that all their students have access to technology. Effective teachers maximize the potential of technology to develop students' understanding, stimulate their interest, and increase their proficiency in mathematics. When technology is used strategically, it can provide access to mathematics for all students. …
>
> Programs in teacher education and professional development must continually update practitioners' knowledge of technology and its classroom applications. Such programs should include the development of mathematics lessons that take advantage of technology-rich environments and the integration of technology in day-to-day instruction, instilling an appreciation for the power of technological tools and their potential impact on students' learning and use of mathematics. All teachers must remain open to learning new technologies, implementing them effectively in a coherent and balanced instructional program. These tools, including those used specifically for teaching and learning mathematics, not only complement mathematics teaching and learning but also prepare all students for their future lives, which technology will influence every day.

Course Components

Note: course readings and assignments have been selected and arranged in compliance with policies set forth by Senate Bill 1 (March 2009), the Kentucky Education Professional Standards Board (EPSB) themes of Diversity, Assessment, Literacy, and Closing the Achievement Gap, and the National Council for the Accreditation of Teacher Education Standards.

- ✓ Due throughout the semester:
  - **Homework problems:** Write-ups of work done in class and home. All homework problems should be typed and submitted properly unless otherwise noted.
  - **Participation:** Each class period all students are required to actively participate in class (see above for participation guidelines). Failure to participate will result in a 5% deduction from your overall, final grade.

  (KTS-I 1, 2-5, 7, 8; NCATE/NCTM 1-15; Diversity, Assessment, Literacy/Reading, Closing the Achievement Gap)

- ✓ **Article Analyses (15 pts. each):** You will be expected to select, read, summarize, and **analyze 2 articles** from a STEM education or general education **professional journal** (print or electronic format) during the semester. The publication date of these articles is not to predate January 1, 2006. These articles must be from the following categories (you may not repeat a category).

  You will be given a form to follow to guide you in your analysis. The form can be found on the course website. The summary/analysis should be 1-2 pages in length. Please refer to the specifications above for turning in assignments. You will need to hand in a copy of the article in addition to your analysis/summary, and the form. If the article is available on the web, you may provide the link to the article on the form and do **not** need to turn in a hard copy. Evaluation will be based upon content as well as proper writing structure. You are encouraged to hand in as many as you can as early in the semester as possible, but I expect the deadlines given on the calendar for the written analyses on the articles. Please refer to the course calendar for due dates.

  Categories: Manipulatives in the classroom, technology in the classroom, alternative assessment, discipline, classroom management, the standards, cooperative learning, diversity in the classroom, special education in the classroom, writing in the classroom, and inclusion in the classroom.

  Due September 30 and October 7. (KTS-I 7,9; NCATE/NCTM 3, 4, 7, 8; Diversity, Literacy/Reading)

Article Analysis #_____

Name:_____

This article addresses the following topic: _____

Publication: _____

Date, volume, and issue number of publication: _____

Page numbers: _____

Analysis and Summary of the Article (1-2 page summary and analysis):
1) What are the theses and key points of article?
2) Explain the significance of this article for your learning or future work as a STEM teacher. For example, how would you modify or implement the ideas or activities it describes?
3) Evaluate the article based on its clarity, usefulness/practicality, and your knowledge of content and pedagogy. Be specific when connecting to other texts or ideas you may have studied.

Article Analysis Scoring Guide

Objective	Points Possible	Points Earned
1. The student gives an accurate summary of the article	5	
2. The student explains the significance of the article by connecting it with his/her current learning or beliefs about future classroom practice, using evidence and examples where appropriate.	5	
3. The student evaluates the usefulness of the article to his/her teaching practice and/or professional development, and connects it with other specific texts s/he may have studied about teaching and content in mathematics	5	
Total	**15**	

- ✓ **Field Experiences:** You will be expected to complete a minimum of 100 hours of field experience in an adolescent classroom in your content area(s) of interest. This will be completed between XXX and XXX. The placement will be made for you at the beginning of the semester. It is your responsibility to communicate with your supervising teacher the expectations and needs of your placement. You are not to just observe in the classroom. Rather, you will be given a specific task to focus on each week. Below is a list of core activities you should focus on during your field experience:
  1. Observe classroom teaching.
     a. Students should regularly spend time observing classrooms in action. They have been prepared to conduct observations in a focused manner, including observing and analyzing teacher actions and behaviors, and observing/interpreting student responses, behaviors, and learning. Focused observation is a key activity in learning to teach at this phase of their development.
  2. Discuss classroom episodes with the cooperating teacher.
     a. Learn about rationales, teacher decision-making, classroom management techniques, instructional methods, etc., by talking with the cooperating teacher. Discussions may be as brief as 5 minutes.
  3. Analyze the cooperating teacher's lesson plans.

a. When possible, please share samples of your lesson and unit planning with the cohort student so s/he can use them as models for his/her own planning.
b. It is also valuable for students to study and review building and district level curriculum guides. Please give students access to any curriculum documents available: scope/sequence guides, etc.

4. Co-plan lessons with the cooperating teacher when possible/appropriate.
5. Co-teach lessons with the cooperating teacher when possible.
6. Teach mini-lessons on skills and strategies related to a lesson or unit, with the supervision of the cooperating teacher.
7. Lead/coach selected cooperative/small learning groups.
8. Assist with class discussions and activities.
9. Lead class discussions with the supervision of the cooperating teacher.
10. Assist students with seatwork by circulating during class.
11. Tutor students, including both struggling students and students in need of enrichment.
12. Explain assignments to the class.
13. Develop assessment rubrics with cooperating teacher supervision.
14. Supervise classroom routines.
15. Use/assist with technology in the classroom.
16. Review and prepare instructional materials.

- ✓ **Classroom Reflections:** After completing a classroom observation, you will reflect on the observation. These will be in the form of a blog posted to the secure course website. The focus of your reflection should be the observation focus of the week although you may reflect on additional experiences as you see fit. You will be expected to comment on at least one other blog/reflection each week in order to help facilitate an online discussion.

- ✓ **Self-Assessment:** You will complete a self-assessment of your dispositions and knowledge of standards as related to teacher education. You will evaluate your strengths and weaknesses and create dispositional goals. You will then reflect on your progress towards these goals and complete an online dispositions self-assessment at the end of the semester.

- ✓ **Webography (50 points).** Locate and summarize the content of 10 websites related to secondary-level STEM education; create an annotated "webography" using the form below. Each annotation will be awarded up to 5 points based on the following criteria:
  - Documentation is accurate. **– 1 point**
  - Summary is systematic and completely explicates all key points. **– 2 points**
  - Pros and Cons are discussed in detail and explained thoroughly in relation to knowledge about teaching and STEM. **– 1 point**
  - Relevance to classroom practices is clearly explained, using examples or hypothetical situations to contextualize assertions**. – 1 point**

(KTS 1, 4, 7, 8, 9; Diversity, Literacy/Reading)

EDC 635 Webography Format Guide

Website URL address: _____
Date Accessed: _____
Title of Website (if applicable): _____
Author and Copyright date: _____

Brief summary/description of content (about a paragraph):

Pros and Cons:
Would you recommend this resource text to someone else? Why or why not?

Relevance/application(s) to the STEM Classroom:

- ✓ **Bulletin Board (30 pts.):** You will select a topic from secondary STEM area that could be displayed in a bulletin board. You will design and submit a plan which will be duplicated for your classmates. You will not be allowed to display your bulletin board until your plan is approved. You bulletin board will be evaluated on, among other things: accuracy, neatness, and creativity of display. The dates for display are TBA. **(KTS-I 3; NCATE/NCTM 3, 4, 7, 8; Literacy/Reading)**

BULLETIN BOARD PLAN

Name_____ Grade Level/Subject_____

Title of Bulletin Board _____

Dimensions _____

Materials Needed _____

_____

SKETCH

Evaluation of Bulletin Boards (Peer Reviewed)

Title of Bulletin Board _____

Please circle the appropriate number on the scale representing your perception of the Bulletin Board on display.

	Strongly Agree				Strongly Disagree
1. The display stimulates interest in a topic, idea, or problem	5	4	3	2	1
2. The display can be easily read	5	4	3	2	1
3. The display is attractive	5	4	3	2	1
4. The display has unity	5	4	3	2	1
5. The captions and titles are short and appropriate	5	4	3	2	1
6. The display is simple, concise, and correct	5	4	3	2	1
7. The display uses color effectively	5	4	3	2	1
8. The display is arranged so that the sequence is clear	5	4	3	2	1
9. The display shows originality and creativity in presentation	5	4	3	2	1
10. Overall rating of the display	5	4	3	2	1

SUM OF SCORES _____

AVERAGE OF SCORES_____

COMMENTS: (remember these will be anonymous!!)

- ✓ **Unit Plan Project (200 pts.):** You will be expected to design a unit plan (100 pts) from your student teaching school's curriculum map. You will have the opportunity to work with a partner, preferably from the same school where you are student teaching and/or someone teaching the same subject area. You will be required to meet together with the professor and your partner (25 pts) regarding your unit plan project twice in the semester.

  From these lessons you will be expected to prepare **one** twenty-minute mini-lesson (25 pts.) to be presented to your classmates and instructors. These teaching sessions will be filmed for you to review. Please note that these teaching sessions should resemble an actual "day on the job" as much as possible in terms of professionalism in **speech** and **clothing**. Your classmates will act as your high school class of the appropriate level.

  You will be given a video copy of your lesson to review and reflect on. A 1-2 page reflection (constructive criticism) and lesson modification (25 pts.) is due 2 weeks after you present your lesson.

  You and your partner will present your unit plan (25 pts) to the class at the end of the semester in a presentation.

  Please see attached sheet and rubrics for more details regarding this assignment. **(KTS 1, 3, 4, 5, 8, 9; NCATE/NCTM 4-15; Diversity, Assessment, Literacy/Reading, Closing the Achievement Gap)**

- ✓ **Teacher/Class Website (25 pts.)**

  As we talked about this past semester, class websites and web communication is increasing rapidly and a requirement for many schools now. This semester, utilizing your sweb space or another site of your choice (e.g., WordPress, Blogger, Google Sites), you will create a website for your classroom. It may be fictional or based upon your current student teaching placement. Requirements for the website and a rubric will be created during a seminar by you all as a class! This assignment is due **Sunday, February 21. (KTS 1-10; NCATE/NCTM 1-16; Diversity, Assessment, Literacy/Reading, Closing the Achievement Gap; KERA Initiatives)**

Professional Development Pass/Fail Components

There are aspects of this course that you will be expected to complete prior to receiving your grade for this course. *Failure to satisfactorily complete any **one** of these components will result in the lowering of your final grade by 1 letter grades.*

- **Professional Development:** Learning to be a STEM education teacher cannot be accomplished within one semester; it is an ongoing, lifelong endeavor. Throughout the semester, each student is expected to demonstrate evidence of willingness to become a lifelong learner. Several opportunities are available, including (but not limited to): (1) joining and attending BBCTM or UK NSTA Meetings, (2) joining the NCTM or NSTA through a regular student membership, (4) observing secondary mathematics, science, and/or computer science teachers outside of the assigned placement, (5) reading a book

or series of articles on STEM education other than those required for class, (6) conducting Web searches of teaching resources, compiling, and submitting a bibliography, (7) attending a campus technology training session, (8) attending conferences and so on. For this course you are required to **attend two professional development session**s as deemed above or other opportunities presented by the Instructor. You will be required to turn in a 2-3 page reflection on the PD overall and how it helped you grow as a future secondary STEM teacher. **(KTS-I 6-10; NCATE/NCTM 7; Diversity, Assessment, Closing the Achievement Gap)**

- ✓ **Department Meeting:** You will need to attend at least one department meeting at your placement school. Write a summary and reflection about this department meeting. **(KTS-I 6-10; NCATE/NCTM 7; Diversity, Assessment, Closing the Achievement Gap)**

THE INSTRUCTOR RESERVES THE RIGHT TO CHANGE ANY PART OF THIS SYLLABUS DURING ANYTIME IN THE SEMESTER. STUDENTS WILL BE ADEQUATELY NOTIFIED WHENEVER CHANGES OCCUR.

Course Schedule and Outline

Class Number and Date	Topics, Agenda, and Readings
Class 1	*Welcome!* • Go over Syllabus • Class Opener • Hopes, fears, orientations • Requirements and scheduling of field experience hours • Bulletin Boards
Class 2	*Observation Skills* • How to observe and reflect • Article Analysis • Complete Self-Assessment • Reflection: What are my strengths and weaknesses of the standards with respect to what they mean for teacher practice and student learning?
Class 3	*The world of STEM Education* • Brahier - Chapter 1—Mathematics as a process & Chapter 2 – Principles of Math Ed. • NCTM-Ch. 1—A vision for school mathematics • Math Wars articles • Reflection: What does it mean to have pedagogical content knowledge as a teacher? What other characteristics contribute to being a successful content area teacher?
Class 4	*Research in STEM Education* • Brahier - Ch. 3—Learning theories and psychology in Math Ed • Malloy – Ch. 6 – Using a "New Synthesis of Reading in Mathematics" to … & Ch. 10 – Why Discourse Deserves our Attention • Learning theories specific to content area • Examination of high school texts • Reflection: Obtain a secondary textbook. Choose a unit or chapter and review it in light of current learning theory. Does the book, for example, appear to follow Bruner's stages of learning by suggesting initial concrete experience? Does the book provide student activities that appear to be inquiry based or constructivist in nature? Typed response, 1-2 pages and cover page.

Class 5	*Curriculum* • Brahier - Ch. 4—Curricular Models & Ch. 5—Implementing a course of study • NCTM—Ch. 3—Standards for School Mathematics • Curricular Models • Implementing a course of study • Kentucky Core Academic Standards • Curriculum Maps • Reflection: Obtain the curriculum map from your school and discuss with **an experienced** teacher. How do they use it? Is it closely followed? How do they develop lesson plans from it?, etc. Typed response, 1-2 pages and cover page.
Class 6	*Field Experience*
Class 7	*Instructional Planning* • Brahier - Ch. 6—Planning for instruction & Ch. 7—Teaching tools and strategies • Instructional Strategies Readings • Malloy – Ch. 1 – Enhancing the learning environment… & Ch. 2 – Facilitating Whole Class… • Planning for Instruction • Teaching tools and strategies • Discussion on Unit Plan Project – begin unit plan with partner • Reflection: How does your teacher instructionally plan? How far in advance do they plan? What techniques and tricks do they use to help stay on top of instructionally planning?
Class 8	*Purposes of Professional Learning Communities* • Types of Professional Learning Communities • How to be a contributing colleague • Reflection: How are PLCs set up at your school? How regularly do they meet? How effective do teachers feel they are? What are the outcomes of the PLC?
Class 9	*Teaching Specific Content* • Ch. 8—Teaching specific mathematics content • NCTM—Ch. 7—Standards for grades 9-12 • Malloy – Ch. 5 – Yes, You Can & Ch. 7 – Generating problems, conjectures, … & Ch. 8 – Egyptian Fractions, graphing calculators, … • Literacy across the content areas • Technology and manipulatives as tools • Teaching specific content in your content area (e.g., evolution, factoring and distributive property, astronomy, etc.) • Reflection: Using your textbook from your cohort school, select a section of the book or an individual lesson that appears to be purely teaching one specific content skill. Rewrite the section or lesson in a way that might help students to connect this idea to at least one other area of your content curriculum. Be sure to state your rationale for doing so and include literacy strategies and accommodations.

Class 10	*Teaching Specific Content* • Technology and manipulatives as tools • Reflection: What content weaknesses do you feel you have as a teacher? How can you overcome these in the classroom?
Class 11	*Field Experience*
Class 12	*Assessment* • Brahier - Ch. 9—The role of assessment & Ch. 10—Principles of Assessment Practices • Assigned Articles • Assessment Literacy • Assessment for Learning • Reflection: In your observations, have you observed a balanced approach to assessment? How would you modify the assessment approach to meet your needs as a teacher? What would you keep the same?
Class 13	*Unit Planning Workshop* • Additional work with instructional strategies • Unit planning group work time, review and feedback
Class 14	*Video Teach* Reflection: Obtain a copy of your video and complete video reflection
Class 15	*Video Teach* • Reflection: Obtain a copy of your video and complete video reflection
Class 16	*Final Exam – online Self-Assessment*

THIS SCHEDULE IS SUBJECT TO CHANGE WITH PRIOR COMMUNICATION TO STUDENTS.

MAJOR TEACHING UNIT GUIDELINES

Goal: To gain practical experience planning, producing, and presenting mathematical material. Remember, you will be doing this multiple times, daily, when you student teach and are a teacher!

An instructional unit plan is a complete, coherent sequence of lessons designed on a single topic or theme. A well-designed unit plan has a set of learning goals and/or objectives; a cohesive plan for day-by-day instruction, including some sort of introduction and conclusion for the unit as a whole; and built-in methods of assessment (a variety!). The unit should incorporate a variety of learning activities, emphasize active student participation, develop students' literacy, use appropriate materials and technology, and integrate several aspects of the content (e.g., mathematical skills, concepts, and the all of the NCTM and Kentucky Core Academic Standards process standards.

You are encouraged to be as creative as possible with your unit plan! You are encouraged to draw on books, teachers, the Internet, and other sources for ideas, but please adapt them to your own style (and students, if applicable). Be sure to cite fully any sources used! The exact format and length of the paper are up to you and your partner, but please follow the guidelines below. If you have any questions about the guidelines or wish to deviate from them in any please, please check with the professor before doing so. In all, the unit plan should be neat, clear, cohesive, and should address the issues specified below.

You will be graded in five parts on the instructional unit plan:

1. Meeting with the professor twice (with your partner)—25 points (all or nothing)
2. Your actual unit plan (with your partner)—100 points
3. Your videotaped lesson—25 points
4. Your lesson reflection and modifications—25 points
5. Your unit plan presentation (with your partner)—25 points
6. **TOTAL POINTS = 200 points**

General Description:

- You will be expected to design a unit plan from your student teaching school's curriculum map. Please choose a unit to develop in the middle or towards the end of the spring semester of the curriculum map. This way, you may actually be able to use the unit plan during your student teaching semester. If this is not possible, please write a plan for a unit that you would like to teach someday. You will have the opportunity to work on this project with a partner who will be teaching the same or similar subjects during their student teaching placement. Partners will be as follows:
    - o

- You will be required to **meet together with the professor and your partner** regarding your project twice in the semester. It will be **your** responsibility to schedule the appointment with your professor! This is part of your grade so "forgetting" is not an

option! The appointments need to be scheduled during the following two sets of time. You will need to bring the materials you have for your unit project, any rough drafts, questions, etc. This is **your** time with your professor. We will go over how you are formatting your lesson plans, your overall plans for your unit, etc. The more you have prepared, the more the successful the meeting will be and the more feedback you will receive.
    - First meeting:
    - Second meeting:

- There is no maximum limit to the number of lesson plans in a unit, but there is a three lesson plan minimum so choose your unit plan carefully. Additional requirements lessons within the unit plan are as follows:
    1) **One** must be for a 55-minute class period if you are on block schedule; **one** must be for a 90-minute class period if you are on a 55-minute class period.
    2) **At least 1** must include an **interactive technology** component (an overhead projector or document camera does **not** count as technology) for which the technology is an integral part of the lesson development (not just a supporting tool)
    3) **At least 1** must be an **interdisciplinary lesson plan** which involves another discipline other than your content area. Consulting and getting feedback from another discipline expert is a must!
    4) **At least 1** must include a **manipulative/hands-on** component for which the manipulative is an integral part of the lesson development (not just a supporting tool)
    5) You will be required to **consult at least two textbooks** for your unit plan. Please do not forget to list these in your references (and resources, if applicable). It is **highly** suggested to include **internet** support as well. In addition to the textbooks your schools use, there are plenty of textbook options in the Education Library on the 2nd floor of Dickey Hall.

- It is expected you will have a unit plan overview. Please see attached sheet for suggested format. **In addition to the suggested format, you need to have a narrative introducing your unit**. Your introduction to the unit should answer the following questions for the reader:
    - Content: What are the important mathematical ideas being learned? How are they developed in this unit? In what forms are they represented?
    - Sequence: What relevant content should students have studied prior to this unit? What relevant content will this unit prepare students for later?
    - Processes: How does this unit address the process standards in the NCTM 2000 standards/NSES and the Kentucky Core Academic Standards?
    - Equity: What features of this unit plan make the content accessible to diverse students, including English Language Learners?

- All lesson plans need to be in KTIP format. Please see attached exemplars and format for KTIP requirements. Your unit plan needs to be in electronic format. There are scanners

available in the TEB 151 computer lab if needed. Only one unit plan needs to be turn in per group. Multiple files are acceptable but please be very explicit as to how the files are related.

- When designing and handing in your assessment pieces, please be sure to include an answer key and any rubrics and/or scoring guides.

- Please try to do as much as you can in electronic format. There are many mathematical images available to you on the internet. Most teacher guides come with CDs that contain mathematical language, symbols and images that are helpful when creating handouts, assignments, tests, etc. Do not be afraid to be creative and to use all of the resources available to you! Scanners are available in the computer lab is 151 TEB (the ITC lab). Microsoft Word has Equation Editor in it that allows you to create correct mathematical symbols, etc. Bottom line, electronic is much easier, cleaner, neater, etc. It is also easier to make updates and changes to from year to year.

- Helpful questions to ask yourself in successfully creating your unit plan:

    - Is the content of the entire unit coherent? Is its place within a broader flow of content made clear?
    - Does the unit focus on important topics in your subject area? Are key concepts and skills clearly identified?
    - Are topics within the unit sequenced and paced appropriately?
    - Is there a balance of skills, concept development, and problem solving?
    - Is there an effective introduction? Conclusion?
    - Are the learning activities appropriate to the content?
    - Are the learning activities varied and interesting?
    - Are process standards woven throughout the unit?
    - Are the objectives clear, explicit, and measurable?
    - Are the objectives appropriate to the content?
    - Are assessment tasks multiple and varied?
    - Are instructional methods multiple and varied?
    - Are students actively involved in every lesson?
    - Is assessment appropriate to the content and integrated with instruction?
    - Is technology used when applicable and in appropriate ways?
    - Is hands-on learning used when applicable and in appropriate ways?
    - Is the unit accessible to diverse learners, including English Language Learners?
    - Is the Kentucky Core Academic Standards cited appropriately in each lesson?

- You will take **one** lesson from your unit plan and teach it in class in the form of a **20-minute mini-lesson**. This is a real lesson; therefore all lesson plan parts need to be present (warm-up, development, conclusion, directions for the assessment, etc.). However, remember, it will be only 20 minutes! Remember this is a professional setting! You will need to have an electronic **and** hard copy of your lesson plan available for me

the day of your lesson; be sure to include all assessment materials and/or handouts with your lesson plan! You will be responsible for any handouts necessary, etc. for the class. I can help you with any materials (technology, manipulatives, etc.) and copies you need, but please let me know in advance…not 5 minutes before! This lesson will be videotaped and used for you to write your reflection (discussed in the next session).

- **Lesson Reflection:** After your videotaped mini-lesson, I will download the video and return it to you electronically. You will have 2 weeks (from the day of your lesson) to analyze and reflect on your teaching and your lesson. The sooner you begin to analyze and reflect the better results you will see in your reflection. Take notes while you are watching your video. Use the feedback you receive on your observation form from your professor to help construct your reflection. What were your strengths in this lesson? What you're your weaknesses? What can you improve upon? Did you use the correct mathematical language? Do you feel you reached and actively involved all of your students? Do you have any distracters or do anything that could be distracting to students while you are teaching? Do you stand in one place or do you move around the room? Is your voice loud enough and clear enough? These are the types of questions (and many more!) you should be asking yourself as you watch your video. Do **not** be afraid to stop and rewind several times while you are watching your video! Be sure to constructively criticize yourself (i.e., compliment yourself on the good things you did well and do not always concentrate on what you need to improve upon!)
    - You will need to turn in any notes you take during your analyzing of your lesson along with your written reflection. You will need to make any modifications to your lesson plan and turn in your final copy of your lesson plan along with your video reflection.
    - So here's what to turn in for this part:
        - Notes from video
        - Lesson plan modifications
        - Reflection on video and lesson

- The last part of this major project is a **unit plan presentation** with your partner. You will need to present an overview of your unit plan to the rest of your class. Talking and work effort time needs to be split 50/50 with your partner. Please limit presentations to 15 minutes. PowerPoint is probably the best method of presenting this type of material, but please feel free to be creative and try something else if you would like! Please note that the presentation rubric requires class interaction during the presentation. A copy of the unit plan overview needs to be given to every member of the class (I can help you with making the copies; just not 5 minutes before class!). Having other handouts (i.e., your PowerPoint, examples) is also very helpful in giving presentations.

KTIP/TPA LESSON PLAN FORMAT

Name: Date: Age/Grade Level:
# of Students: # of IEP Students: # of GSSP Students:
# of LEP Students:
Subject: Major Content: Lesson Length:
Unit Title: Lesson Number and Title:

ACTIONS – Described prior to observation

Learning Targets –
State what students will demonstrate as a result of this lesson. Learning Targets must be student-centered and observable/measurable.

Connections –
Connect your goals and objectives to appropriate Kentucky Core Academic Standards. Use no more than three to four connections, and if not obvious, explain how each objective is related to the Kentucky Core Academic Standards.

Context –
- Explain how this lesson relates to the unit of study or your broad goals for teaching about the topic.
- Describe the students' prior knowledge or the focus of the previous lesson.
- Describe generally any critical student characteristics or attributes that will affect student learning (other than what you described in the Teaching and Learning Context).

Resources, media, technology –
- List the specific materials and equipment needed for the lesson. Attach copies of printed materials to be used with the students.
- If appropriate, list technology resources for the lesson including hardware, software, and Internet URLs, and be sure to cite the sources used to develop this lesson. (If you or your committee feel the technology observed in the lessons does not fairly represent your use of technology, provide additional documentation. See Standard IX.)

References-
List any materials and references used in the creation of this lesson plan. Use proper APA format.

Procedures –
Describe the strategies and activities you will use to involve students and accomplish your objectives including how you will trigger prior knowledge and adapt strategies to meet individual student needs and the diversity in your classroom.

I. A-set/Introduction/Entrance Slip/Bell work
II. Lesson Development
III. Closure
IV. If-time strategies (not just students will work on their homework)

V. Modifications—for individual students (if applicable) or in general—enrichment and support activities
VI. Writing prompt (if you will use this prompt as part of your assessment do not forget to include it in your assessment matrix and description)

Student Assessment –
Clearly state how you will assess student progress in meeting the above objectives, including performance criteria you will use. Attach written assessment measures, rubrics, and keys used in relation to the lesson.

In tabular format, organize how each objective will be assessed. Include copies of assessment instruments and rubrics (if applicable to the lesson plan). In addition to "Objective 1", please write out each objective.

Objective/Assessment Plan Organizer (Sample)

Objective Number	Type of Assessment	Description of Assessment	Depth of Knowledge Level	Adaptations and/or Accommodations
Objective 1	Formative	Brainstorm	1	Record ideas visually
Objective 3	Summative	Written response for student portfolio	2	Word Banks for student with reading IEP

IMPACT – Prepared after the lesson and post-observation conference

Reflection/Analysis of Teaching and Learning –
Discuss student progress in relation to the stated objectives (i.e., what they learned with indicators of achievement). Discuss success of instruction as it relates to assessment of student progress. Include three student samples (high, average, low) and an analysis of their performance based on assessment results.

REFINEMENT – Prepared after the lesson and post-observation conference

Lesson Extension/Follow-up –
Based on your reflection, discuss plans for subsequent lessons to reinforce and extend understanding particularly for students who did not make satisfactory progress.

Lesson Plan Checklist

Name: _____ Lesson Plan #: _____

Item (Points Possible)	Comments				
Name/Cover Sheet (1)					
Requirements (1)	50-minute ☐	Block ☐	Technology ☐	Hands-On ☐	Interdisciplinary ☐
Goals and Objective(s) (3)					
Connections, including KCAS (5)					
Context (including student prior knowledge) (5)					
Resources/Materials/ Technology (3)					
References (2)					
Procedures					
A-Set/Introduction/Bell Work (relates to objective/goals) (5)					
Development/Logical Flow/Transition (15)					
Creativity (5)					
Guided Practice (3)					
Validity (5) and Accuracy (5) (spelling, grammar, mathematical content, mathematical language)					
Closure (5)					
If-Time Strategies (2)					
Differentiated Instruction (8)					
Neatness/Readability (4)					
Modifications/Extensions Support (2) and Enrichment (2)					
Writing Prompt (3)					
Assessment					
Variety of styles (3); Variety of levels (2)					
Validity (3)					
Appearance (2)					
Objective/Assessment Organizer (8)					
Depth of Knowledge Indicators (3)					

Unit Plan Overview Format

It is important to remember the objectives selected for the instructional unit should relate directly to the Kentucky Core Academic Standards (as they become available) and a balanced assessment approach. In addition, special attention should be given to the current EPSB Themes which include: Closing the Achievement Gap, Literacy, Diversity, and Assessment.

The Unit Plan should include the following:

1. **Title of Unit**
2. **Narrative Introducing the Unit (described above)**
3. **Learning Context and Implications:** Identify two to three implications and/or rationale for teaching this unit. Also, provide an overview of available technology that could be used to enhance your instruction and student learning.
4. **Key Concepts/Big Ideas/Essential Questions Focus:** Identify the content focus concepts (essential questions and/or big ideas) and skills you plan to develop in this unit. Kentucky's Core Academic Standards list specific knowledge and skills that all students should know and be able to demonstrate. Describe how your unit will contribute to what Kentucky expects all students to know and be able to do.
5. **Statement of Objectives for the Unit:** Develop learning outcomes/objectives that will be the focus of your instruction in this unit. Write these as performance statements/behavioral objectives.
6. **Kentucky Core Academic Standards to be Addressed:** Identify the Kentucky Core Academic Standards that will be the focus of your instruction for your unit.
7. **Communication with Students, Parents/Caregivers, Colleagues:** Describe several ways in which you plan to provide feedback throughout the Instruction Unit. How will you provide information to students, parents/caregivers, and colleagues prior to instruction, during instruction, and after the post-assessment.

Unit Plan Scoring Guide

Unit Plan Format and Scoring Guide

The Instructional Unit is a two- to four-week body/unit of instruction for one class subject. The unit includes 1) plans for instruction and assessment aligned with state standards and learning goals; 2) the teaching of the content; and 3) plans for collection of, analysis of, and reflection upon evidence of student progress toward the specified learning outcomes.

The Unit Plan should include the following, to be scored as specified here:

_____1) Title of Unit and Estimated Time of Completion (5 points)

_____2) Learning Context and Implications (20 points): Write a *general* description of the grade-level/classroom context for which your unit plan is designed (ex., 10th grade general trackmathematics in a rural school). Include a well-developed rationale for teaching this unit and an overview of available technology (based on your MIC cohort school's resources) that could be used to enhance your instruction and student learning. Explain how elements of your context such as students' funds of knowledge (prior academic learning, popular cultures, home/community experiences, etc.), school resources and scheduling, access to technology, and so forth might require you to adapt your plans and instruction.

5 points	10 points	15 points	20 points
Context and implications are unclear; descriptions include numerous inaccuracies about students, context, and/or resources; plans for accommodating learners and/or adapting instruction to the context are inadequate or inappropriate.	Context and implications are present and clear, but descriptions sometimes contain inaccuracies; accommodations and adaptations are often unclear or inappropriate.	Context and implications are present, clear, and accurate in their overall representations. There may be minor discrepancies. Accommodations and adaptations are clear and appropriate.	Context and implications are specific, accurate, and described with nuance and sophistication. There are no discrepancies. Accommodations and adaptations based on contextual issues are appropriate, thorough, and innovative.

_____3) Key Concepts/Big Ideas/Essential Questions/Generative Topics Focus (25 points): Identify the content focus concepts (essential questions and/or big ideas) and skills you plan to develop in this unit. Use Kentucky's Academic Core Standards to list specific knowledge and skills that all students should know and be able to demonstrate. Describe how your unit will contribute to what Kentucky expects all students to know and be able to do.

10 points	15 points	20 points	25 points
Key concepts are too vague or unclear; connections to standards are unclear, unspecific, and/or inappropriate; specific knowledge and skills to be learned, and/or connection to state learning goals/expectations are unclear or inappropriate.	Key concepts are clear, but connections to standards are occasionally unclear or inappropriate; specific knowledge/skills to be learned is explicit and clear; connection to state learning goals/expectations is adequate.	Key concepts are clear, specific, and grade-level appropriate. Knowledge/skills to be learned is explicit, clear, and thoroughly aligned with state standards; connection to state learning goals/expectations is thorough.	Key concepts are clear, specific, and targeted for a specific context. Specific knowledge/ skills to be learned is explicit, clear, and thoroughly aligned with state standards; connection to state learning goals/ expectations is sophisticated.

_____4) Statement of Objectives for the Unit, and Kentucky Core Content and Program of Studies To Be Addressed (25 points): Develop learning outcomes/objectives that will be the focus of your instruction in this unit. Align your objectives with state standards. Write clear and highly specific learning objectives.

10 points	15 points	20 points	25 points
Unit objectives are unclear about what students will do during instruction and class time. Unit objectives do not clearly indicate what students will learn or do, and it is often difficult to understand how they align with state standards and Key Concepts that focus the unit.	Unit objectives are generally clear about what students will be expected to learn or do during instruction and class time. Unit objectives may not always align clearly with state standards and Key Concepts that focus the unit.	Unit objectives are consistently clear about what students will learn and do during instruction and class time. Unit objectives consistently align with state standards and Key Concepts that focus the unit.	Unit objectives are consistently clear and highly specific about what students will learn and do during instruction and class time. Unit objectives consistently and align with state standards and Key Concepts that focus the unit.

Levels and Categories of Student Performance Expected (DOKs, Performance Assessments, etc.)

_____5) Lesson Plans Related to the Unit (100 points): Use the KTIP lesson planning template (to be provided during class), and focus on the alignment of learning objectives in each lesson with state standards, lesson procedures, and student assessments. When possible and appropriate, you are encouraged to modify and teach these lessons during student teaching experience; however, you are not required to do so. If you wish to teach your lessons at your cohort school, work with your cooperating teachers to identify topics (texts, skills, concepts, or processes) the students will study/experience in the curriculum, identify possible times/dates when you can teach lessons, and plan your unit project accordingly. Make sure cooperating teachers will be available to observe and assist. Your lesson plans will be worth 20 points each, scored using the following rubric.

5 points	10 points	15 points	20 points
Lesson plan does not follow KTIP format, is incomplete, or generally unclear and difficult to follow. Objectives, connections to standards, context, resource descriptions, references, procedures, and/or student assessment may be missing, incomplete, or insufficient.	Lesson plan follows KTIP format and is complete, but frequently is unclear or difficult to follow. All elements are complete but often undeveloped.	Lesson plan follows KTIP format and is both complete and easy to follow. All elements are complete and well-developed.	Lesson plan follows KTIP format and is so clear and thorough that another teacher could implement the lesson without difficulty. All elements are well-developed and demonstrate sophisticated and innovative pedagogical thinking by the teacher(s).

Total Points: 175

Video Reflection Rubric

Criteria	Points Possible	Points Earned	Comments
Detailed notes from your observation of your video are included along with approximate times into the lesson. The professor can look at your notes and have a good idea of what happened during the lesson.	5		
The reflection includes a thoughtful and thorough self-reflection on this lesson and the experience of teaching it. A variety of insights are offered, and these are backed up with specific examples.	7		
Specific video evidence incorporated to guide your reflection. Thoughtful reflection and ideas for change based on evidence from video. Many specific examples from lesson support your ideas.	5		
Lesson plan changes were made based on reflection of video teach	5		
The reflection is error-free, in the correct format, and exceptionally professional.	3		
TOTAL POINTS	**25**		

Additional Comments: