

REQUEST FOR NEW COURSE

1. General Information.	
a. Submitted by the College of: Education	Today's Date: 11.06.09
b. Department/Division: Curriculum & Instruction	
c. Contact person name: Molly Fisher	Email: molly.fisher@uky.edu Phone: 257.1643
d. Requested Effective Date: <input checked="" type="checkbox"/> Semester following approval OR <input type="checkbox"/> Specific Term/Year ¹ : _____	
2. Designation and Description of Proposed Course.	
a. Prefix and Number: EDC 603	
b. Full Title: Curriculum and Instruction in STEM Education	
c. Transcript Title (if full title is more than 40 characters): C&I in STEM Ed	
d. To be Cross-Listed ² with (Prefix and Number): N/A	
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.	
____ Lecture	____ Laboratory ¹
____ Clinical	____ Colloquium
____ Seminar	____ Studio
____ Recitation	____ Practicum
____ Other – Please explain: _____	____ Residency
2 Discussion	1 Research
____ Indep. Study	
f. Identify a grading system: <input checked="" type="checkbox"/> Letter (A, B, C, etc.) <input type="checkbox"/> Pass/Fail	
g. Number of credits: 3	
h. Is this course repeatable for additional credit? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	
If YES: Maximum number of credit hours: _____	
If YES: Will this course allow multiple registrations during the same semester? YES <input type="checkbox"/> NO <input type="checkbox"/>	
i. Course Description for Bulletin:	This course introduces fundamental issues related to curriculum and instruction in STEM programs. Major topics addressed will include (but will not be limited to), defining STEM education, its curricula, purposes, and past and present social and political influences affecting the development and focus of STEM education. Additional discussion will address the stakeholders of STEM education that participate in the development, testing, implementation, and assessment of STEM curricula. A major focus of the course will be on the review of selected STEM curricular programs that reflect research-based "best practices" in STEM education.
j. Prerequisites, if any: _____	
k. Will this course also be offered through Distance Learning? YES ⁴ <input checked="" type="checkbox"/> NO <input type="checkbox"/>	

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)

⁴ You must also submit the Distance Learning Form in order for the proposed course to be considered for DL delivery.

REQUEST FOR NEW COURSE

1.	Supplementary teaching component, if any:	<input checked="" type="checkbox"/> Community-Based Experience	<input type="checkbox"/> Service Learning	<input type="checkbox"/> Both
3.	Will this course be taught off campus?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
4.	Frequency of Course Offering.			
a.	Course will be offered (check all that apply):	<input checked="" type="checkbox"/> Fall	<input type="checkbox"/> Spring	<input type="checkbox"/> Summer
b.	Will the course be offered every year?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
	If NO, explain: _____			
5.	Are facilities and personnel necessary for the proposed new course available?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
	If NO, explain: _____			
6.	What enrollment (per section per semester) may reasonably be expected?	15		
7.	Anticipated Student Demand.			
a.	Will this course serve students primarily within the degree program?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
b.	Will it be of interest to a significant number of students outside the degree pgm?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
	If YES, explain: <u>Students in STEM related fields</u>			
8.	Check the category most applicable to this course:			
	<input type="checkbox"/> Traditional – Offered in Corresponding Departments at Universities Elsewhere			
	<input type="checkbox"/> Relatively New – Now Being Widely Established			
	<input checked="" type="checkbox"/> 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 <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	
	If YES, name the proposed new program: _____			
b.	Will this course be a new requirement ⁵ for ANY program?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	
	If YES ⁵ , list affected programs: <u>Master of Science in STEM Education</u>			
10.	Information to be Placed on Syllabus.			
a.	Is the course 400G or 500?	YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>	
	If YES, the <i>differentiation for undergraduate and graduate students must be included</i> 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.	<input checked="" type="checkbox"/> The syllabus, including course description, student learning outcomes, and grading policies (and 400G-/500-level grading differentiation if applicable, from 10.a above) are attached.			

⁵ In order to change a program, a program change form must also be submitted.

REQUEST FOR NEW COURSE

Signature Routing Log

General Information:

Course Prefix and Number: **EDC 603**

Proposal Contact Person Name: Molly Fisher Phone: 257.1643 Email: molly.fisher@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
Curriculum & Instruction	1/20/10	Mary Shake / 257.5676 / mcshak1@email.uky.edu	<i>Mary C. Shake</i>
Courses & Curricula	1/26/10	Jeff Reese 257-4909 jeff.reese@uky.edu	<i>Jeff Reese</i>
College of Education	2/9/10	Robert Shapiro 257-9795 rshap@l.uky.edu	<i>Robert Shapiro</i>
		/ /	
		/ /	

External-to-College Approvals:

Council	Date Approved	Signature	Approval of Revision ⁶
Undergraduate Council			
Graduate Council			
Health Care Colleges Council			
Senate Council Approval		University Senate Approval	

Comments:

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

EDC 603: Curriculum and Instruction in STEM Education SYLLABUS

“Research and Reflection for Learning and Leading”

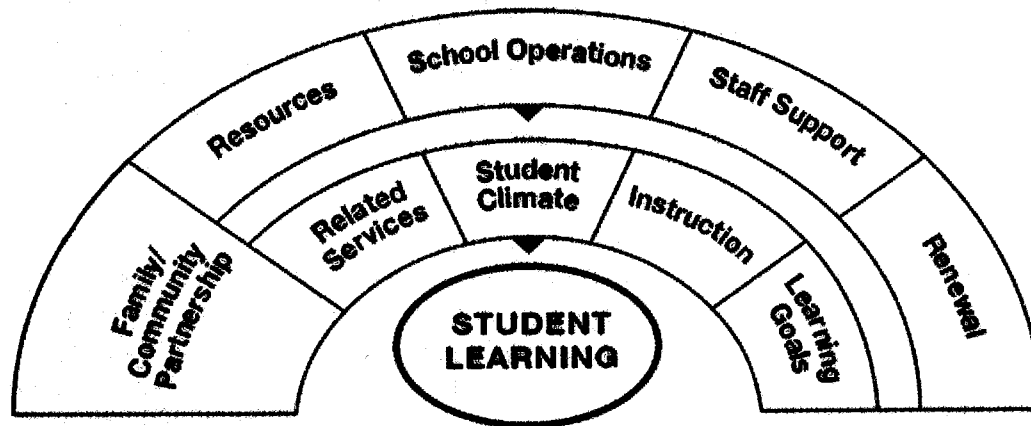
Instructor:	Molly Fisher
Office Location	307 DH
Phone Number	257.1643
Email	molly.fisher@uky.edu
Virtual Office Hours	Arranged individually through email; Telesupervision and Skype access also available
Technological Requirements	Computer with internet access or access to UK computer facilities; Access to digital video recording devices (digital camera, digital video recorder, laptop webcams)
For Technological assistance	Contact TASC at _____ or call 859.257.8272 Contact Information Technology Customer Service Center 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	
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	

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.

Leadership, and specifically Teacher Leadership, within our framework of *Research and Reflection for Learning and Leading*, is informed by the "Framework for School Leadership Accomplishments" (Bellamy, Fulmer, Murphy, & Muth, 2007, p. 34). In this framework, **student learning** is the central objective and it is accomplished through nine interactive, collaborative efforts by diverse stakeholders (see Figure 1 below). Permission to use this model was granted by Bellamy and his colleagues.

Figure 1. Framework for School Leadership Accomplishments¹



This framework is designed to help actualize the theme, *Research and Reflection for Learning and Leading*, and thus prepare a skilled and influential group of leaders who will work as members of learning communities focused on the essential goal of schools: student learning.

¹ Bellamy, T., Fulmer, C., Murphy, M., & Muth, R. (2007). *Principal accomplishments: How school leaders succeed*. New York: Teachers College Press.

Course Overview/Objectives:

This course introduces fundamental issues related to curriculum and instruction in STEM programs. Major topics addressed will include (but will not be limited to), defining STEM education, its curricula, purposes, and past and present social and political influences affecting the development and focus of STEM education. Additional discussion will address the stakeholders of STEM education that participate in the development, testing, implementation, and assessment of STEM curricula. A major focus of the course will be on the review of selected STEM curricular programs that reflect research-based "best practices" in STEM education.

Course Objectives/Learning Outcomes:

- Students will identify historical influences on the introduction and implementation of STEM curriculum and instruction.
- Students will analyze issues that influence the acceptance and implementation of research-based STEM curricula.
- Students will review research related to curriculum and instruction in STEM education.
- Students will draw on current research and theory to evaluate STEM curricula.
- Students will research ways to develop appropriate learning environments and assessment strategies for students of diverse backgrounds within a STEM classroom.
- Students will explore and evaluate STEM curricula based on the national standards and guidelines as defined by the *National Science Education Standards, Principles and Standards for School Mathematics, National Educational Technology Standards, National Academy of Engineering, and American Society for Engineering Education*, as well as the state standards defined by the *Kentucky Program of Studies and/or its replacement as per Senate Bill 1 (i.e., Common Core Standards)*.

Course Delivery

This proposed course is designed as a hybrid course. Approximately 50% of the class meetings will occur on campus. During this time, students will participate in class discussions and present projects. During the sessions in which students attend class online, they will complete class reading and reflective summaries, participate in online discussions, and work collaboratively with their small groups online as they critique curricula, and develop research their curriculum projects. Where an online discussion is utilized, discussions will take place using a Learning Management System such as Blackboard.

Course Assessment Tasks:

Assignments must be submitted on or before the due dates given in the course schedule. **Five percent will be deducted from the value of an assignment for each day it is late**, unless prior arrangements have been made with the instructor. Full descriptions of these assignments and evaluation rubrics for each are appended to this syllabus.

Task	Task Description	Standards Alignment
National Standards Presentation	Students will present one standard from each of the four national guidelines in the STEM disciplines and provide a brief summary and comparison of the four standards. Students will have the option to work in pairs on this presentation.	KTS 1, 2, 3, 4, 5, 8, 9, 10
Reflections	Students will write a one-page (minimum) weekly critical and reflective responses to primary readings, course assignments, in-class and online discussions and activities, as well as participate in oral discussion (individual or group) and online discussions	KTS 7, 8, 10
STEM Curriculum Analysis	Students will choose a current and relevant curriculum in STEM education to review and analyze. The assignment will result in a 5-page (minimum) review submitted to the instructor and a 15-minute presentation of the curriculum. Examples of potential programs are: Math Science Partnership (MSP), TERC, Realistic Explorations in Astronomical Learning (REAL), Save the Penguins, Engineering Teaching Kits, and EasyTech.	KTS 5, 7, 8, 10
Diversity Analysis	Students will choose a diversity topic of interest related to their curriculum based STEM research project and write a ten-page (minimum) literature review and analysis of previous research in the chosen area. This assignment is designed to segue into the research project as a portion of this assignment can be used to strengthen the background and purpose of the research project, if needed.	KTS 2, 10
Curriculum Based STEM Research Paper	Each student will complete a curriculum based research project based on a compilation of readings in class with a personal research interest of their choice in a STEM discipline. Projects ideas include (but are not limited to) development of a paper, curriculum unit, or other special research project designed by the instructor. This final project should be completed in a publishable format so the student can choose to publish the work after completion.	KTS 1, 2, 3, 4, 5, 6, 9, 10 (depending on project)

Course Outline:

Week:	Topic:
1	Overview of <i>What is Curriculum?</i>

2-3	National and local Standards a. National Science Education Standards b. Principles and Standards for School Mathematics c. National Educational Technology Standards d. National Academy of Engineering/ American Society for Engineering Education e. Kentucky Program of Studies
4-5	Historic Perspectives in STEM Curricula
6	Curriculum Evaluation Features
7-8	Models of Instruction and Curricular Designs
9	Understanding by Design
10-11	Integrated STEM Curricula
12-13	Race and Gender Issues in STEM Curriculum and Instruction
14-15	Assessment Issues
16	Systemic Reform

Grading Scale

100 – 91: A 90 – 81: B 80 – 71: C 70 and below: E

Course Policies

Addressing Themes of Diversity, Assessment, and Technology

All UK professional education programs address and affirm the value of diversity in education, the use of technology to support all aspects of instructional programming, and the importance of attaining high levels of skill in assessing the outcomes of instruction. This course will provide students an opportunity to demonstrate attention to these themes and reflect on the mechanisms that this course has provided to demonstrate improved skills in these areas.

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

Evidence of professional dedication will be expected throughout this course and in all course-related interactions. Credit for participation and professionalism will be part of the evaluation. This means, in part, that we expect your regular, punctual attendance and participation. If you miss a class for any reason, it is **your** responsibility to contact the instructor and to make up any work.

Attendance, Participation, and Professionalism together

1. Students will attend all class meetings and field placement sessions.
2. Students will complete all assignments prior to scheduled discussions and due dates (see course calendar).
3. Students will attend all class meetings and be active participants.
 - a. Active participation may include: verbal participation in discussions, asking questions or responding to peers or instructor in constructive ways, clearly demonstrating active listening (taking notes, paying attention, etc.), and communicating with the instructor via office meetings and/or email.
4. Absences will be communicated in advance and in writing to the instructor, or will do so as soon as possible.
 - a. It is the **student's** responsibility to pursue make-up work and collect materials and information from missed class meetings.

Students will conduct themselves in a professional and ethical manner.

- b. They will be punctual, presentable, respectful of peers and instructors, and they will be honest in their academic efforts.
 - c. They will attend to and engage course materials to learn and improve their knowledge, understanding, and practice as teachers.
5. Attendance, participation, and professionalism will be assessed holistically based on the above criteria, and will be used to determine the outcome of borderline grades.

6. Students are encouraged to communicate regularly with the instructor so that they are aware of their standing.
7. Students who fail to attend class, participate as expected, and/or conduct themselves professionally or ethically will be required to meet with the instructor to set improvement goals.
8. Poor conduct or lack of participation may negatively affect their course grades.
9. 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.
10. In non-emergency situations, late work will not be accepted without prior arrangements with the instructor.
 - a. The instructor reserves the right to refuse late work or to accept late work for reduced credit unless the student has made prior arrangements with the instructor.

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.

Classroom Behavior, Decorum, and Civility (aka, Ethics Statement)

This course and its participants will not tolerate discrimination, violence, or vandalism. EDC 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 of 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 graduate students, future teachers, and ambassadors for the University of Kentucky. Any unethical behavior in class may result in failure for the course and/or expulsion from the 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 the instructor 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.

Commitment to Diversity

The UK Department of Curriculum and Instruction 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 instruction in Kentucky's secondary schools is directly and indirectly affected by this department'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 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 students 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.

Commitment to Addressing the Achievement Gap

The UK Department of Curriculum and Instruction aligns itself with the positions of the NCTM, NCSS, NSTA, and NCTE regarding cultural and linguistic diversity. The program seeks to underscore that cultural and linguistic diversity should be treated as integral components of public education, and that the failure to accommodate such diversity in curriculum and instruction contributes to disparities in student achievement across racial populations—a phenomenon popularly referred to as “the achievement gap.”

Commitment to Technology

The UK Department of Curriculum and Instruction is committed to teaching students so they use technology as a personal and professional tool. Our program is guided by NCATE standards, UK College of Education Technology Standards, EPSB Teacher Standards, and SPA Standards as they relate to technology. Students are required to use technology for a majority of their classes. Students use technology for class assignments, lesson plan design and preparation, class presentations, record keeping, and data analysis. Students are required to successfully complete course work focusing on using technology. Our students 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 students 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 students access to "smart" classrooms and technology labs in order to further facilitate their use of technology.

List of References

The following texts align with the Kentucky Teacher (Initial) Standards, NCATE/NCTM Standards, NCATE/NSTA Standards, Common Core Standards, Proposed Kentucky Teacher Leader Standards, ISTE, and EPSB themes

KY Learner Goals and Expectations, Program of Studies and Core Content – online documents (or their replacements as they become available)

Subject-area Professional Association (SPA) K-12 standards.

Common Core Standards (as they become available) and their related documents (www.commoncore.org)

Additionally, the following list reflects suggested readings that would guide the curriculum of the course:

- Apple, M. (1993). The politics of official knowledge: Does a national curriculum make sense? *Teachers College Record*, 95 (2), 222- 241.
- Atkin, J. M. (1998). The OECD study of innovations in science, math and technology education. *Journal of Curriculum Studies*, 30 (6), 647-660.
- Ball, D. & Cohen, D. (1996). Reform by the book: What is - or might be - the role of curriculum materials in teacher learning and instructional reform? *Educational Researcher*, 25 (9), 6.
- Bestor, A. (1953/1985). *Educational wastelands: The retreat from learning in our public schools*. Urbana, IL: University of Illinois Press. pp. 23-39 and 81-100.
- Boaler, J. (2002). *Experiencing school mathematics: Traditional and reform approaches to teaching and their impact on student learning*. Mahwah, New Jersey: Erlbaum Associates, Inc.
- Borich, G. D. (1992). *Effective teaching methods*, second edition. New York: Macmillan Publishing Company.
- Brown, A. L., Bransford, J. D., Ferrara, R., and Campione, J. (1983). Learning, remembering and understanding. In J. H. Flavell and E. M. Mardman (Eds.), *Handbook of child psychology: Vol. 3. (4th ed.)*, pp. 77-166. New York: Wiley.
- Bransford, J.; Brown, A.L.; & Cocking, R.R. (2000). *How people learn: Brain, mind, experience, and school*, Expanded Edition. Arlington: NSTA Press.

- Campbell, B. & Fulton, L. (2003). *Science notebooks: Writing about inquiry*. Arlington: NSTA Press.
- Cobb, P., Yackel, E., & McClain, K. (2000). *Symbolizing and communicating: Perspectives on discourse, tools, and instructional design*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Cohen, D. K., and Barnes, C. A. (1993). Pedagogy and policy, and conclusion: A new pedagogy for policy? In D. K. Cohen, M. W. McLaughlin and J. E. Talbert (Eds.), *Teaching for Understanding: Challenges for Policy and Practice*, San Francisco, CA: Jossey-Bass, pp. 207-275.
- Collins, A. (1996). Design issues for learning environments. In S. Vosniadou, E. De Corte, R. Glase, and H. Mandl (Eds.), *International Perspectives on the Design of Technology-supported Learning Environments*. Lawrence Erlbaum Associates, Mahwah, NJ.
- Collins, A., Brown, J. S., and Newman, S. (1989). Cognitive apprenticeship: teaching the craft of reading, writing, and mathematics. In L. Resnick (Ed.), *Cognition and Instruction: Issues and Agendas*. Hillsdale, NJ: Erlbaum, p. 453-494.
- Collins, A., Greeno, J.G., & Resnick, L.B. (1994). Learning environments. In T. Husen & T.N. Postlethwaite (Eds.), *International Encyclopedia of Education* (2nd edition). Oxford, UK: Pergamon. pp. 3297-3302.
- Cuban, L. (1990). Reforming again, again, and again. *Educational Researcher*, 19 (1), pp. 3-13.
- DeBoer, G. (1990). *A history of ideas in science education*. New York: Teachers College Press.
- Delpit, L. (1988). The silenced dialogue: Power, pedagogy in educating other people's children. *Harvard Education Review*, 58(3), 280-298.
- Dewey, J. (1902). *The child and the curriculum*. Chicago. University of Chicago Press.
- Dewey, J. (1916). *Democracy and education*. New York: Free Press.
- Dodge, D., Heroman, C., Charles, J., & Malorca, J. (2004). Beyond outcomes: How ongoing assessment supports children's learning and leads to meaningful curriculum. *Young Children*, 59 (1), 20-28.
- Duckworth, E. (1996). *The having of wonderful ideas and other essays on teaching and learning*. New York, NY: Teachers College Press.
- Duschl, R. (1991). *Restructuring science education*. New York: Teachers College Press.
- Ellis, A. (2003). *Exemplars of curriculum theory*. Larchmont, NY: Eye of Education.
- Fensham, P. (1992). *Science and technology curriculum handbook*. New York: Mamillan.

- Frankenstein, M. (1990). Incorporating race, class, and gender issues into a critical mathematical literacy curriculum. *The Journal of Negro Education*, 59 (3), 336.
- Fullan, M. G. (1993). Why teachers must become change agents. *Educational Leadership*, 50 (6), pp. 12-18.
- Hiebert, J. (2003). What research says about the NCTM standards. In J. Kilpatrick, W.G. Marin & D. Schifter (Eds.), *A Research Companion to Principles and Standards for School Mathematics* (pp. 1-23). Reston, VA: National Council of Teachers of Mathematics.
- Kaplan, M. (1986). *The great society and its legacy*. Durham, NC: Duke University Press.
- Kilpatrick, J., Martin, W. G., Schifter, D. (2003). *A research companion to principles and standards for school mathematics*. Reston, VA : National Council of Teachers of Mathematics.
- Knapp, M. (1995). *Teaching for meaning in high poverty classrooms*. New York: Teachers College Press.
- Kliebard, H. (1992). Constructing a history of the American curriculum. *The Curriculum Handbook* (pp. 157-184). NY: MacMillon.
- Lareau, A. (2003). *Unequal childhoods: Class, race, and family life*. Los Angeles: University of California Press.
- McRobbie, C. and Tobin, K. (1997). A social constructivist perspective on learning environments. *International Journal of Social Education*, 19, 193-208.
- Moseley, M. (1992). Educating faculty for teaching in an interdisciplinary general education sequence. *Journal of General Education*, 41, 8.
- Moyer, P.S., & Milewicz, E. (2002). Learning to question: Categories of questioning used by preservice teachers during diagnostic mathematics interviews. *Journal of Mathematics Teacher Education*, 5 (4), 293-315.
- National Academy of Sciences. (1996). *National Science Education Standards*. Washington, D.C.: National Academy Press.
- National Council of Teachers of Mathematics. (2000). *Principles and Standards for School Mathematics*. Reston, VA: National Council of Teachers of Mathematics.
- Oakes, J., Gamoran, A., & Page, R. (1992). Curriculum differentiation: Opportunities, outcomes and meanings. *The Curriculum Handbook* (pp. 570-608). NY: MacMillon.
- Page, R. (1990). Games of Chance: The lower-track curriculum in a college-preparatory high school. *Curriculum Inquiry* 20(3), 249-281.

Remilard, J. (1999). Curriculum materials in mathematics education reform: a framework for examining teachers' curriculum development. *Curriculum Inquiry*, 29(3), 315-342.

Schwab (1960). The Practical: Translation into curriculum. In Ian Westbury and Neil Wilkof (Eds.) *Science, Curriculum and Liberal Education*. Chicago: University of Chicago Press.

Stormzand, M. (1924). *Progressive methods in teaching*. Boston: Houghton Mifflin.

Wiggins, G. & McTighe, J. (2001). *Understanding by design*. Upper Saddle River, New Jersey: Prentice-Hall, Inc.

Zemelman, S., Daniels, H., and Hyde, A. (1998). *Best practice: New standards for teaching and learning in America's schools*, 2nd edition. Portsmouth, NH: Heinemann Publishing.

Distance Learning Form

This form must accompany every submission of a new/change course form that requests distance learning delivery. This form may be required when changing a course already approved for DL delivery. **All fields are required!**

Introduction/Definition: For the purposes of the Commission on Colleges Southern Association of Colleges and Schools accreditation review, *distance learning* is defined as a formal educational process in which the majority of the instruction (interaction between students and instructors and among students) in a course occurs when students and instructors are not in the same place. Instruction may be synchronous or asynchronous. A distance learning (DL) course may employ correspondence study, or audio, video, or computer technologies.

A number of specific requirements are listed for DL courses. **The department proposing the change in delivery method is responsible for ensuring that the requirements below are satisfied at the individual course level.** It is the responsibility of the instructor to have read and understood the university-level assurances regarding an equivalent experience for students utilizing DL (available at <http://www.uky.edu/USC/New/forms.htm>).

Course Number and Prefix: EDC 603	Date: 11/6/09
Instructor Name: Molly Fisher	Instructor Email: molly.fisher@uky.edu
<p>Check the method below that best reflects how the majority of course of the course content will be delivered.</p> <p style="text-align: center;"> Internet/Web-based <input type="checkbox"/> Interactive Video <input type="checkbox"/> Hybrid <input checked="" type="checkbox"/> </p>	

Curriculum and Instruction	
1.	<p>How does this course provide for timely and appropriate interaction between students and faculty and among students? Does the course syllabus conform to University Senate Syllabus Guidelines, specifically the Distance Learning Considerations?</p> <p>Timely and appropriate interaction will be assured through weekly use of asynchronous and synchronous online discussion groups. Discussions will be facilitated by faculty member. Chats will also be used for weekly interaction. The syllabus does conform to the University Senate Guidelines and includes Distance Learning Considerations and information.</p>
2.	<p>How do you ensure that the experience for a DL student is comparable to that of a classroom-based student's experience? Aspects to explore: textbooks, course goals, assessment of student learning outcomes, etc.</p> <p>The textbooks, course goals, and assessment of student learning outcomes are identical to a face-to-face class. This hybrid course will offer a mixed method of course presentation. In this class, the only differences are that class-based discussion is through electronic discussion boards and online chat, class materials are available from the download sites, and assignments are distributed and collected online. Students in the course will participate in online and in-class activities, and group work. All students will participate in the same experiences.</p>
3.	<p>How is the integrity of student work ensured? Please speak to aspects such as password-protected course portals, proctors for exams at interactive video sites; academic offense policy; etc.</p>

Abbreviations: TASC = Teaching and Academic Support Center DL = distance learning DLP = Distance Learning Programs

Distance Learning Form

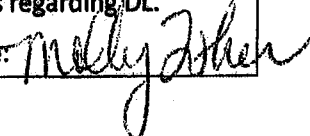
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	<p>The integrity of student work is ensured by requiring the same requirements as a face-to-face class. As an advanced graduate class, course assessment are based on developed projects rather than examinations. The security of student work is facilitated by the security afforded of UK's Blackboard and SharePoint course system. Final student presentations will be given in the final class face-to-face meeting on campus.</p>
4.	<p>Will offering this course via DL result in at least 25% or at least 50%* (based on total credit hours required for completion) of a degree program being offered via any form of DL, as defined above?</p> <p>Yes.</p> <p>If yes, which percentage, and which program(s)?</p> <p><i>Fifty-percent of the Master of Science in STEM Education will be delivered through distance learning.</i></p> <p>*As a general rule, if approval of a course for DL delivery results in 50% or more of a program being delivered through DL, the effective date of the course's DL delivery will be six months from the date of approval.</p>
5.	<p>How are students taking the course via DL assured of equivalent access to student services, similar to that of a student taking the class in a traditional classroom setting?</p> <p>Course readings will be available online through UK's library sites. Textbooks will be available for purchase online. The instructor will maintain virtual office hours during which time students may participate in online chat sessions, email, or call the instructor for a live conversation. The syllabus includes details for accessing student services on campus for technology support and library support.</p>
<i>Library and Learning Resources</i>	
6.	<p>How do course requirements ensure that students make appropriate use of learning resources?</p> <p>The discussion boards and chats will be tracked for evidence of participation. Readings will be monitored for download. Downloaded readings will be the subjects of discussion boards and chats. Assignments require the use of technology and publication resources.</p>
7.	<p>Please explain specifically how access is provided to laboratories, facilities, and equipment appropriate to the course or program.</p> <p>Technology tools used in the course will be available to students in class and in the College of Education Instructional Technology Center (ITC).</p>
<i>Student Services</i>	
8.	<p>How are students informed of procedures for resolving technical complaints? Does the syllabus list the entities available to offer technical help with the delivery and/or receipt of the course, such as the Teaching and Academic Support Center (http://www.uky.edu/TASC/index.php) and the Information Technology Customer Service Center (http://www.uky.edu/UKIT/)?</p> <p>Students are informed in the actual syllabus as well as in orientation letters emailed to the students.</p>

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10.	<p>Does the syllabus contain all the required components, below? <input checked="" type="checkbox"/> Yes</p> <ul style="list-style-type: none"><input type="checkbox"/> Instructor's <i>virtual</i> office hours, if any.<input type="checkbox"/> The technological requirements for the course.<input type="checkbox"/> Contact information for TASC (http://www.uky.edu/TASC/; 859-257-8272) and Information Technology Customer Service Center (http://www.uky.edu/UKIT/; 859-257-1300).<input type="checkbox"/> Procedure for resolving technical complaints.<input type="checkbox"/> Preferred method for reaching instructor, e.g. email, phone, text message.<input type="checkbox"/> Maximum timeframe for responding to student communications.<input type="checkbox"/> Language pertaining academic accommodations:<ul style="list-style-type: none">o "If you have a documented disability that requires academic accommodations in this course, please make your request to the University Disability Resource Center. The Center will require current disability documentation. When accommodations are approved, the Center will provide me with a Letter of Accommodation which details the recommended accommodations. Contact the Disability Resource Center, Jake Karnes, Director at 859-257-2754 or jkarnes@email.uky.edu."<input type="checkbox"/> Information on Distance Learning Library Services (http://www.uky.edu/Libraries/DLLS)<ul style="list-style-type: none">o Carla Cantagallo, DL Librariano Local phone number: 859 257-0500, ext. 2171; long-distance phone number: (800) 828-0439 (option #6)o Email: dllservice@email.uky.eduo DL Interlibrary Loan Service: http://www.uky.edu/Libraries/libpage.php?lweb_id=253&llib_id=16
11.	<p>I, the instructor of record, have read and understood all of the university-level statements regarding DL.</p> <p>Instructor Name: Molly Fisher</p> <p>Instructor Signature: </p>

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