

Northern Kentucky University
College of Education and Human Services
EDMT 543, Method and Pedagogy in Middle School/Secondary Science
3 Credit hours
Wed 4:50-7:35, MEP 158
Fall, 2016



Learn, Lead, Succeed

Mission

The College of Education and Human Services plays an important leadership role and collaborates with others in the creation, dissemination, and application of knowledge and research that enhances professional practice and transforms lives, schools, and communities.

Vision

The College of Education and Human Services aspires to be known throughout the Commonwealth of Kentucky and region at large as the leader in providing opportunities for engaged learning and applied scholarship that fosters individual growth and collective success.

Kentucky Academic Standards (KAS)

Preparation of Kentucky's students for the demands of the 21st century requires districts and schools to prepare every student for successful transition to be College and Career Ready. The Kentucky Academic Standards help ensure that all students throughout Kentucky are provided with common content and have opportunities to learn at high levels. As education candidates complete and implement projects and assignments throughout their education programs at NKU, they will incorporate the components of the [Kentucky Academic Standards](#).

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Office Hours: Tuesday 12:30-2:30, Wednesday 2:30-4:30 & Thursday 12:00-2:00 or by appointment

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Required Textbook: Chiappetta, E.L. & Kobella, T.R. (2015). *Science Instruction in the Middle and Secondary Schools*. 8th Edition. Pearson

Additional Resources: (NOT Required)

National Research Council. (2000). *Inquiry and the National Science Education Standards*. Washington, D.C.: National Academy Press.

Also available online as a free PDF at http://www.nap.edu/catalog.php?record_id=9596
 National Research Council. (2012). A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas. Washington D.C.: National Academy Press.

Also available online as a free PDF at http://www.nap.edu/catalog.php?record_id=13165
 Next Generation Science Standards (2013).

Available <http://education.ky.gov/curriculum/sci/pages/next-generation-science-standards.aspx>

Course Description:

EDU 330: Principles and methods for teaching secondary school science concepts, skills, and processes in accordance with national and state standards with emphasis on inquiry including design, implementation, assessment, and evaluation, and reflection-on-practice strategies in connection with technology, meeting all students' needs and integration across the curriculum.

EDU 346: Principles and methods for teaching middle school science concepts, skills, and processes in accordance with national and state standards with emphasis on inquiry including design, implementation, assessment and evaluation, and reflection-on-practice strategies in connection with technology, meeting all students' needs and integration across the curriculum.

EDMT 543: Theories, methods, techniques and technologies in designing, delivering and evaluating instruction in middle school and high school science.

Student Learning Outcomes, Assessment and Standards Alignment

Student Learning Outcome	Assessment (Assignments) KAS Alignment	Kentucky Teacher Standards (Initial) (Advanced)	InTASC Category	(SPA) Standards	KFFt Domains
Review science literature and lessons that represent best practices for consideration in instruction	Readings, Participation, Philosophy Statement, Class Blog	3.2, 3.3, 3.4, 3.5, 6.1	The Learner and Learning, Instructional Practice	NSTA 6	3B, 3D, 1A, 1B
Design assessments that appropriately support all students' needs	Unit Plan, Peer Teaching Science KAS (6,7,8 HS PS1, PS2, PS3, PS4; LS1, LS2, LS3, LS4; ESS1, ESS2, ESS3; ETS1) are reviewed and included, as appropriate, for the lesson and unit plans developed by preservice teachers)	2.1, 2.3, 2.4, 2.5	The Learner and Learning	NSTA 1, 5, 6	1F, 3C

Plan and lead science lessons	Unit Plan, Peer Teaching Science KAS (6,7,8 HS PS1, PS2, PS3, PS4; LS1, LS2, LS3, LS4; ESS1, ESS2, ESS3; ETS1) are reviewed and included, as appropriate, for the lesson and unit plans developed by preservice teachers)	1.1, 2.1, 2.4, 2.5, 3.2, 3.3, 3.4, 3.5, 4.1	The Learner and Learning, Content Knowledge	NSTA 1, 2, 3, 4	1A, 1B, 1E, 3A, 3C
Demonstrate understanding of co-teaching strategies	Peer Teaching, Class Blog	4.1, 4.3, 4.5, 8.3	Content Knowledge, Instructional Practice	NSTA 2	2A, 4D
Reflect on planning, teaching, professional development, and science classroom scenarios for continual professional growth	Reflections	9.1, 9.4	Professional Responsibility	NSTA 6	4A, 4E

Course Assignments and Grading

ASSIGNMENTS

	Total Points Possible 500 (EDU 346 & 330)	Total Points Possible 600 (EDMT 543)
Philosophy of Science Teaching Statement	20	20
Science Education Literature and Summary	30	30
Lesson Plans	75	75
Unit Plan and Reflection	125	125
Co-teaching & Reflection	75	75
Professional Development Activity & Reflection	50	50
Class Blog	75	75
Infographic and Presentation (Graduate Students Only)		100
Participation: In-class activities, class discussions, field trips and weekly readings	50	50

Assignment Descriptions

Philosophy of Science Teaching Statement: Write a 1-2 page science teaching philosophy. The philosophy should describe your personal views on what makes a well managed, engaging, and productive science classroom. The philosophy should address the following topics: classroom climate, student learning, and behavior.

Science Education Literature and Summary: Choose and read a piece of literature that relates to your content area and/or the science classroom. Write a summary of the book and your teaching suggestions. You will present your book to the class ("Book Talk"). Presentations will be short (5 min.), informal and ongoing throughout the semester. A schedule will be posted in Blackboard.

Lesson Plans: Write two lesson plans that include age and ability level appropriate science content that align with the NGSS.

Unit Plan and Reflection: Create a 5-day Unit Plan with a partner. Unit plans must include 5 days of sequential instructional activities, excluding a "test" day. Student assessments should be incorporated within each daily lesson. Unit plans should follow the KTIP guidelines and include at least one hands-on or lab activity. Write an individual reflection of the unit plan. Reflections should include your thought process and details about the planning process, such as why you included or excluded specific activities, any challenges you faced, etc.

Co-teaching and Reflection: Plan and co-teach a 40-minute science lesson with a partner. A copy of the lesson plan must be handed in the day you teach. The lesson should demonstrate a co-teaching model and address appropriate science standards. *The lesson must be one from your unit plan. Individually write a reflection of the peer teaching experience. Reflections are due 1 week after the peer teaching.

Professional Development Activity and Reflection: Participate in a professional development activity during the semester. Write a reflection of the PD experience. Reflections should include a 1-page summary description of the professional development activity and a minimum of 1-page describing what you gained from this experience, how it might impact your teaching, and/or strategies you may implement in the future. Summaries are due within 1 week of attending the professional development.

Class Blog: Students will contribute 3 resources to a class Blog throughout the semester. The Blog entries will include an active link to the resource, as well as a summary and critique. Individual Blog topics and due dates will be posted in Blackboard.

Infographic and Presentation (Graduate Students Only): Using free on-line software, such as Piktochart, create an infographic related to a science concept you would teach in the classroom. Create a sample poster and instructions on how to use this technology. Teach a small group of your peers how to use the program and provide suggestions for classroom use. Small group teaching will take place 12/2.

Participation: Attendance points will be earned for each class session. Points will be awarded for participating in class discussions, attending field trips, completing readings, and in-class activities. Points will be docked for absence, tardiness, or lack of participation.

Grading Scale

Undergraduate Plus – Minus scale		
Letter Grade	% Equal to or Greater than	Grade Point
A	95-100	4.00
A-	93-94.99	3.67
B+	91-92.99	3.33
B	87-90.99	3.00
B-	85-86.99	2.67
C+	83-84.99	2.33
C	77-82.99	2.00
C-	75-76.99	1.67
D+	73-74.99	1.33
D	70-72.99	1.00
F	0- 69.99	0

Graduate Plus – Minus scale		
Letter Grade	% Equal to or Greater than	Grade Point
A	95-100	4.00
A-	93-94.99	3.67
B+	91-92.99	3.33
B	87-90.99	3.00
B-	85-86.99	2.67
C+	83-84.99	2.33
C	77-82.99	2.00
F	0-76.99	0

The College of Education and Human Services requires education majors to earn a grade of C or better in all education (EDU & EDS) courses. A grade of C- or lower is not acceptable for program completion.

Mid-term Grade: Mid-term grades will be posted in myNKU by the deadline established in the [Academic Calendar](#).

Final Examination Information: Date and time to be announced.

Course Policies and Procedures

Student Honor Code: The [Student Honor Code](#) [the "Honor Code"] is a commitment by students of Northern Kentucky University, through their matriculation or continued enrollment at the University, to adhere to the highest degree of ethical integrity in academic conduct. It is a commitment individually and collectively that the students of Northern Kentucky University will not lie, cheat, or plagiarize to gain an academic advantage over fellow students or avoid academic requirements.

The purpose of the Honor Code is to establish standards of academic conduct for students at Northern Kentucky University and to provide a procedure that offers basic assurances of fundamental fairness to any person accused of violations of these rules. Each Northern Kentucky University student is bound by the provisions of the Honor Code and is presumed to be familiar with all of its provisions. Students also should aspire to conduct themselves in a manner that is consistent with the highest degree of ethical integrity in all matters, whether covered in the Honor Code or not. The success of this commitment begins in the diligence with which students uphold the letter and the spirit of the Honor Code.

In addition, students in the education programs must also adhere to the [College of Education and Human Services Code of Ethics](#) and the [Professional Code of Ethics for Kentucky School Certified Personnel](#).

Credit Hour Policy Statement: In accordance with federal policy, NKU defines a credit hour as the amount of work represented in the achievement of student learning outcomes (verified by evidence of student achievement) that reasonably approximates one hour (50 minutes) of classroom instruction and a minimum of two hours of out-of-class student work. For every course credit hour, a typical student should expect to spend at least three hours per week of concentrated attention on course-related work including, but not limited to, class meeting time, reading, reviewing, organizing notes, studying and completing assignments. At least an equivalent amount of time is expected for other academic activities such as online courses, laboratory work, internships, practica, studio work and other academic work leading to the award of credit hours.

Estimates of the time required for a typical student to complete course expectations are as follows:

In-Class: 1 day x 165 minutes x 15 weeks	=	41.25 Hours
Readings: 16 x 3 hours each	=	48 Hours
Class Blog: 3 assignments x 3 hours each	=	9 Hours
Professional Development: 1 x 10 hours	=	10 Hours
Co-Teaching Prep: 8 hours	=	8 Hours
Unit Plan: 1 x 30 hours	=	30 Hours
Total	=	146.25 Hours
EDMT 543 Expect an additional 20-30 hours for research and in-class presentation		
*Note: these times are estimates and may vary by student and assignment		

Attendance: Pre-service teachers are expected to attend all class meetings and participate in class discussions and group activities. Pre-service teachers must establish priorities and make decisions concerning conflicts with regularly scheduled class.

Attendance will be documented on a sign-in sheet each class session. Failure to sign in will result in a loss of attendance points. Pre-service teachers arriving to class late will be docked participation points. Attendance points will be earned by completing in-class activities and discussions. **Candidates with more than four absences during the semester will automatically receive a failing grade for the course regardless of the number of points earned by completing course assignments.** If there are extenuating circumstances resulting in excessive absences (e.g., extended hospitalization), it is the pre-service teachers responsibility to schedule an appointment with the instructor to discuss a waiver from the attendance policy. Waiver from the stated policy is at the discretion of the instructor.

If a pre-service teacher must miss class for any reason, it is his/her responsibility to obtain any materials, notes, and assignments. Assignments and weekly readings are still due on the established due date.

Professionalism: As one who is preparing for the teaching profession, each pre-service teacher is expected to conduct himself/herself in a professional manner. Professionalism includes, but is not limited to, the following: regular, on-time attendance to class; participation in class activities; collaboration with

other professionals in the class; submission of assignments by the due date; and demonstration of professional dispositions and ethics. Candidates are encouraged to familiarize themselves with the NKU Honor Code, the College Code of Ethics, and the Professional Code of Ethics for Kentucky School Personnel. Lack of professionalism may result in the lowering of one's final grade. Cheating and plagiarism are considered serious violations of the Honor Code and Code of Ethics and may result in a failing grade for the course and/or recommendation of dismissal from the teacher education program.

Cell phone Policy: Cell phones are not permitted during class unless being used for instructional purposes at the request of the instructor. Failure to adhere to this policy will result in loss of attendance points.

Quality of Work: All work completed outside of class and submitted for evaluation must be typed (double spaced/12-point font). The work should reflect proper grammar and evidence of proofreading. In addition to the specific criteria incorporated in each assignment, all submissions will be evaluated on the mechanics of writing, organizational structure, and clarity of presentation. When candidates submit assignments, the instructor assumes the candidate is submitting his/her best effort; therefore, candidates may not resubmit assignments for a second evaluation to receive a higher grade. All work submitted must bear the pre-service teacher's name, course number, and section. **By placing his/her name on an assignment, the pre-service teacher is verifying that the work is the original, independent product of his/her individual effort.**

Late Assignments: All assignments must be submitted in Blackboard by the posted due date. If circumstances beyond the pre-service teacher's control make this impossible, arrangements must be made with the instructor in advance for an extension of time to be granted, at the instructor's discretion. No late assignments will be accepted, with the exception of the aforementioned circumstances.

Student Evaluation of Instructor and Course: Northern Kentucky University takes Instructor and Course Evaluations very seriously as an important means of gathering information for the enhancement of learning opportunities for its students. It is an important responsibility of NKU students as citizens of the University to participate in the instructor and course evaluation process. During the two weeks* prior to the end of each semester classes, you will be asked to reflect upon what you have learned in this course, the extent to which you have invested the necessary effort to maximize your learning, and the role your instructor has played in the learning process. It is very important that you complete the online evaluations with thoughtfully written comments.

Student evaluations of courses and instructors are regarded as strictly confidential. They are not available to the instructor until after final grades are submitted, and extensive precautions are taken to prevent your comments from being identified as coming from you. Students who complete an evaluation for a particular course (or opt out of doing so in the evaluation) will be rewarded for their participation by having access to their course grade as soon as that grade is submitted by the instructor. On the other hand, any student who does not complete the course evaluation (or opt out of doing so in the evaluation) should expect to incur a two week delay in access to his or her course grade beyond the university's official date for grade availability. To complete online evaluations go to <http://eval.nku.edu>. Click on "student login" and use the same USERNAME and PASSWORD as used on campus.

In addition, you should be aware of:

- Evaluations can affect changes in courses. Evaluations without comments are less valuable and less credible than those filled out thoughtfully. Comments that are expressed well are more effective than those that are not.
- Positive feedback is just as important as criticism. Moreover, negative evaluations without any explanation and specifics are not especially useful.
- Once grades are submitted, all evaluations are read not only by the instructor, but also by the instructor's department chairperson.

- Evaluations not only provide feedback to your instructor, but also provide information to the department chair for use in performance evaluations. This information affects reappointments, promotions, salaries, and teaching assignments.

Accommodations Due to Disability: Northern Kentucky University is committed to providing reasonable accommodations for all persons with disabilities. The syllabus is available in alternate formats upon request. Students with disabilities: If you are seeking classroom accommodations under the Americans with Disabilities Act, you are required to register with the Disability Programs and Services Office in SU 303. To receive academic accommodations for this class, please obtain the proper DPS forms and meet with me at the beginning of the semester. More information on Disability Services can be found at <http://disability.nku.edu>.

University Connect and Persist (UCAP): Students experiencing roadblocks to academic success may seek assistance from Retention Coordinators in SRA. Financial, personal, and social concerns sometimes interfere with the dedicated focus needed to be successful in college. SRA helps students connect to academic and support services, create individual learning plans, and advance successfully towards graduation. More information is available at <http://ucap.nku.edu>. Call (859) 572-6497 for an appointment or stop by University Center 120.

Bibliography

Bybee, R. W. (2000). Teaching science as inquiry. In J. M. E. v. Zee (Ed.), *Inquiring into Inquiry Learning and Teaching in Science* (pp. 20-46). Washington, D.C.: American Association for the Advancement of Science.

Clough, M.P. (2011). Teaching and Assessing the Nature of Science. *Science Teacher*, 78(6), 56- 60.

Furtak, E. M. (2006). The problem with answers: An exploration of guided scientific inquiry teaching. *Science Education*, 90, 453-467.

Kerlin, S., McDonald, S., Kelly, G. (2009). Mapping a science inquiry unit. *Journal of Classroom Interaction*, 43(2), 4-13.

National Research Council. (2012). *A Framework for K-12 Science Education: Practices, Crosscutting Concepts, and Core Ideas*. Washington D.C.: National Academy Press.

National Research Council. (2000). *Inquiry and the National Science Education Standards*. Washington, D.C.: National Academy Press.

Additional readings will be selected from the appropriate NSTA journal (High School Science - *The Science Teacher*, Middle School Science – *Science Scope*)

Course Schedule

Date	Topic	Assignments Due
8/24	Introductions / Course Overview/ Why Teach Science	
8/31	KTIP and PGES	DUE 8/31 Weekly Reading Ch. 1 & 2 Philosophy Statement
9/7	NGSS/ Unit Planning/ Lesson Planning	DUE 9/7 Weekly Reading Ch. 3 Lesson Plan #1
9/14		DUE 9/14 Weekly Reading Ch. 4 Class Blog #1
9/21	Fieldtrip 5-7 pm Meet at Rothenberg Rooftop School Garden Rothenberg Preparatory Academy 241 E. Clifton Ave. Cincinnati, OH 45202	DUE 9/21 Weekly Reading Ch. 5
9/28	Co-teaching training	DUE 9/28 Weekly Reading Ch. 6 Lesson Plan #2 Book Talk 1
10/5	Unit Planning Workshop	DUE 10/5 Weekly Reading Ch. 7 Class Blog #2 Book Talk 2
10/12	Peer Teaching Day #1	DUE 10/12 Weekly Reading Ch. 8 Book Talk 3
10/19	Peer Teaching Day #2	DUE 10/19 Weekly Reading Ch. 9 Book Talk 4
10/26	Peer Teaching Day #3	DUE 10/26 Weekly Reading Ch. 10 Class Blog #3 Book Talk 5
11/2	CINSAM ngSC Special Guests	DUE 11/2 Weekly Reading Ch. 11 Book Talk 6
11/9	Peer Teaching Day #4	DUE 11/9 Weekly Reading Ch. 12 Book Talk 7
11/16	Peer Teaching Day #5	DUE 11/16 Weekly Reading Ch. 13 Book Talk 8
11/23	No Class (Thanksgiving Break)	
11/30	Lab work versus Fieldwork	DUE 11/30 Weekly Reading Ch. 14 Unit Plan Book Talk 9
12/7	Infographic Presentations	DUE 12/7 Weekly Reading Ch. 15

		Book Talk 10
12/14	Finals Week	DUE 12/14 Book Talk 11 Professional Development Activity & Reflection

The instructor reserves the right to make any necessary adjustments to this syllabus to better address the needs of the candidates.

Middle school and high school were either the best times of your life or the worst. Regardless, as secondary education teacher, your job is to try to make everyone's middle and high school experience the best it can be. It's true though – a side perk of the job is that you can either relive the glory days or get a second chance! A huge number of students jump into teaching right out of their undergraduate degree. The ranking below outlines the 35 best master's in secondary education degrees. These programs have graduated literally thousands of educators who are now top teachers in their schools. Soon enough, you'll be able to join the ranks and make a huge difference in the lives of countless young people! See more ideas about Middle school science, Claim evidence reasoning, Teaching science. Full video previews are available for the first 24 hours after a resource kit is uploaded. Follow my store to know when a new resource is available! Critical thinking is one of the most essential skills that can be taught, especially in the middle and upper grades. Teach your students to be critic Middle School Classroom High School Students Education Quotes For Teachers Quotes For Students Higher Order Thinking Middle School Writing Gymnasium High School English Critical Thinking. Critical Thinking Task Cards for Middle School & High School. Secondary teaching resources from Tes give you everything you need for KS3 or KS4 lessons, GCSE preparation and work schemes for post-16 students. Inspire your students with a range of secondary school teaching resources. Whether you're teaching key stage 3, key stage 4 or preparing for GCSE exams, keeping your class engaged with new materials will help them fulfil their potential. Here you'll find classroom resources, PowerPoint presentations, lesson plans and teaching ideas for students from Year 7 to Year 11. You'll also find schemes of work for post-16 students. Choose from a range of materials that have been created, used and reviewed by fellow teachers.