Midwestern State University

Gordon T. & Ellen West College of Education

Course Syllabus − Fall 2021
Teaching Methods in Science (Middle & High School)
SCIENCE BLOCK: EDUC 4083

Instructor: Gary Cunningham M.Ed.
Office: Bridwell 329
Office hours: **Tues.** 9:15-11 am, **Wed.** 8- 12, **Thur.** 9:15-11 am
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Course Textbooks and References

Pearson (2010), Teaching Science Through Inquiry-Based Instruction, 13th Edition Terry L. Contant, Joel L Bass, Anne A Tweed, Arthur A. Carin,

References

Texas Educational Agency (TEKS for Science) -
http://ritter.tea.state.tx.us/rules/tac/chapter112/index.html
Texas College and Career Readiness Standards (CCRS) -
http://www.thecb.state.tx.us/files/dmfile/CCRS081009FINALUTRevisions.pdf
Texas Educational Agency Texas Safety Standards K-12
http://www.texasgateway.org/sites/default/files/resources/documents/TEA%20Texas%20Safety%20S tandards.pdf
NSTA Position Statement, Safety and School Science Instruction- http://www.nsta.org/about/positions/safety.aspx
The Texas Higher Education Coordinating Board College and Career Readiness Standards- College and Career Readiness Standards -
http://tea.texas.gov/Curriculum_and_Instructional_Programs/College_and_Career_Readiness/
Additional selected readings will be provided by the instructor.

Catalog/Course Description

Prerequisites: EPSY 3153 and SPED 3613. Admission to the teacher education program. This field-based, 3-credit course focuses on middle and secondary school science pedagogy with emphasis on instructional strategies and models, the use of technology in the learning/teaching process, effective practices, professionalism, curriculum, and lesson design. Different teaching strategies include: appropriate use of create approaches to the learning/teaching process, cooperative learning, direct instruction, inquiry, concept attainment, etc.

Conceptual Framework Overview

The outcomes for graduates of professional programs are based upon knowledge, skills, and dispositions in the following elements:
Learner Development - understand how learners grow and develop, recognizing that patterns of learning and development vary individually within and across the cognitive, linguistic, social, emotional, and physical areas, and design and implements developmentally appropriate and challenging learning experiences.

Learning Differences -understand individual differences and diverse cultures and communities to ensure inclusive learning environments that enable each learner to meet high standards.
Learning Environment - work with others to create environments that support individual and collaborative learning, and that encourage positive social interaction, active engagement in learning, and self-motivation.
Content Knowledge - understand the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and creates learning experiences that make the discipline accessible and meaningful for learners to assure mastery of the content.
Application of Content - understand how to connect concepts and use differing perspectives to engage learners in critical thinking, creativity, and collaborative problem solving related to authentic local and global issues.
Assessment - understand and use multiple methods of assessment to engage learners in their own growth, to monitor learner progress, and to guide the teacher's and learner's decision making.
Planning for Instruction - plan instruction that supports every student in meeting rigorous learning goals by drawing upon knowledge of content areas, curriculum, cross-disciplinary skills, and pedagogy, as well as knowledge of learners and the community context.
Instructional Strategies - understand and use a variety of instructional strategies to encourage learners to develop deep understanding of content areas and their connections, and to build skills to apply knowledge in meaningful ways.
Professional Learning and Ethical Practice - engage in ongoing professional learning and use evidence to continually evaluate his or her practice, particularly the effects of his or her choices and actions on others (learners, families, other professionals, and the community), and adapts practice to meet the needs of each learner.
Leadership and Collaboration - seek appropriate leadership roles and opportunities to take responsibility for student learning, to collaborate with learners, families, colleagues, other school professionals, and community members to ensure learner growth, and to advance the profession.

Course Requirements

Academic Honesty

MSU students demand of themselves the highest level of academic honesty as delineated in their honor creed. Academic honesty involves the submission of work that is wholly the student's own work, except in the case of assigned group work. Additionally, academic honesty involves the proper citation of other authors' works.
By enrolling in this course, the student expressly grants MSU a "limited right" in all intellectual property created by the student for the purpose of this course. The "limited right" shall include but shall not be limited to the right to reproduce the student's work product in order to verify originality and authenticity, and for educational purposes.

Disability Support

As the faculty of the West College of Education, we are dedicated to helping meet the needs of our students with disabilities and are eager to provide the accommodations to which such students are entitled. If you have a documented disability and are registered with the Office of Disability, please let your instructor know to expect a letter from that office describing the accommodations to which you are entitled. If you have a documented disability but are not registered with the Office of Disability, please contact that office immediately to register.

Instructor Drop

An instructor may drop a student any time during the semester for <u>excessive absences, for consistently failing to meet class assignments, for an indifferent attitude, or for disruptive conduct</u>. The instructor must give the student a verbal or written warning prior to dropping the student from the class. An instructor's drop of a student takes precedence over the student-initiated course drop of a later date. The instructor will assign a grade of either WF or F through the first 8 weeks of a long semester, the first 6 weeks of a 10 week summer term, or the 11th class day of a 4 or 5 week summer term consisting of 20 days. After these periods the grade will be an F. The date the instructor drop form is received in the Office of the Registrar is the official drop date.

Attendance Policy

Professional teachers are dependable, reliable, and responsible. Therefore, candidates are expected to be on time and in attendance at **<u>every</u>** class/clinical experience, and to stay for the **<u>entire</u>** class/clinical experience. Tardiness, leaving early, and excessive absences (3) are considered evidence of lack of dependability, and are taken seriously. After one incident (one freebe) of tardy or absence points will be deducted for each incident. **Candidates will receive a grade of F on the third absence. If a candidate is taking 'blocked' courses that are taught at a Professional Development School, requiring field experience, the candidate will be dropped with an F from those classes as well.**

Professional Behavior

Face covering masks will be worn correctly during the entire class and field experience.

If you must miss a class or field session, please notify the appropriate persons IMMEDIATELY. If you will be missing field, please email/text your Methods professor, as well as your mentor teacher. If you fail to make appropriate notifications, you will be dropped from your Methods course(s).

The Methods courses may be your first experience with professional requirements which can differ substantially from general college student requirements. The requirements for this professional experience include:

> Students are expected to assist in maintaining a classroom environment which is conducive to learning. In order to ensure that all students have the opportunity to gain from time spent in class/clinical experiences, unless otherwise approved by the instructor, **students are prohibited from engaging in any form of distraction—this includes, but is not limited to, pagers and cell phones.** Electronic communications devices will be turned off anytime the class member is in the school building—in our classroom or in a field experience classroom. Inappropriate behavior in the classroom shall result, minimally, in a request to leave class and a Professional Fitness Form will be filed for review with the college. If the instructor must file a Fitness Alert Form for any reason, including failure to demonstrate appropriate teaching dispositions, the student may receive an instructor drop with an "F" for the course.

Your participation in classes at a Professional Development School is a privilege, not a right. Our relationship with these schools is critical to the development of strong teachers. If, for ANY reason, you are asked to leave a Professional Development School, you will be dropped from the course in accordance with the Instructor Drop policy (see below) of the academic catalog. This is your warning as required by the policy. If a candidate is taking 'blocked' courses that are taught at a Professional Development School, requiring clinical experience, the candidate will be dropped with an F from those classes as well.

Communication

Any emails I receive will have a response by the end of the next business day. Any emails sent on Friday will have a response by the end of Monday.

Professional Attire

Please follow the host campus teacher dress code, which can be found in the handbook available on each course's D2L. BHS and BMS staff dress code is the same as that found in the student dress code. However, it is important to note that staff (and you) cannot wear jeans. When in doubt, err on the side of professionalism and caution, particularly with necklines, hemlines and tattoos.

Dispositions

- Candidates in the teacher education program are first evaluated on their dispositions towards the 10 InTASC standards during the professional block, Block A, and Student Teaching in the following areas
- Candidates respect learners' differing strengths and needs and are committed to using this information to further each learner's development.
- Candidates believe that all learners can achieve at high levels and persist in helping each learner reach his/her full potential.
- Candidates are committed to working with learners, colleagues, families, and communities to establish positive and supportive learning environments.
- Candidates realize that content knowledge is not a fixed body of facts but is complex, culturally situated, and ever evolving. He or she keeps abreast of new ideas and understandings in the field.
- Candidates value flexible learning environments that encourage learner exploration, discovery, and expression across content areas.
- Candidates are committed to using multiple types of assessment processes to support, verify, and document learning.
- Candidates respect learners' diverse strengths and needs and are committed to using this information to plan effective instruction.
- Candidates are committed to deepening awareness and understanding the strengths and needs of diverse learners when planning and adjusting instruction.
- Candidates take responsibility for student learning and use ongoing analysis and reflection to improve planning and practice.

- Candidates actively share responsibility for shaping and supporting the mission of his/her school as one of advocacy for learners and accountability for their success. Candidates are evaluated by faculty in those courses at a developing, beginning, and mastery level of competency as evaluated by the academic committee on program quality. In this Block A, candidates are evaluated at the developing level of competency based upon evidence gathered through observed field experiences and unit planning.

Observation Schedule

Each candidate needs to be observed 3 times. For all level Spec Ed candidates (who will be placed at Kirby), that translates to 1 observation per methods course, so one Science observation.
If a candidate requests to be observed outside of the designated course time, and the Mentor Teacher has approved it, the instructor may agree if she so desires.
Observations (if approved by instructor) can be individual/small group instruction for shorter durations, and can also include team teaching, provided that each observation is preceded by the submission and feedback of a lesson plan and includes a formal observation form for each candidate.
When you begin scheduling your observations, please remember that this is a professional document; you may not delete/move/overwrite anyone's name. You must only type your name in an empty box. Please be sure to submit your observation lesson plan to me at least ***7 days before you plan to teach it***.

Student Evaluation and Grading

- Assessment of your performance in this class will be based on the assignments described below. Below is a brief description of each assignment
- All written work must follow APA guidelines as specified in the 6th edition of the Publication Manual of the American Psychological Association (2009). All assignments will be submitted via D2L or TK20. Some assignments may also require a hard copy or interaction with a Wiki-space.

Notice

Changes in the course syllabus, procedure, assignments, and schedule may be made at the discretion of the instructor.

Assignments	Points
Laboratory Safety	50
Chapter Quizzes	200
Model Lesson for Personal/Peer Review	50
Lesson Plan Reflection	50
Classroom Observation	300
Lesson Study	100
Participation and Disposition	50
Comprehensive Unit Plan	150
Final	50

*- Lab safety course is a pre-requisite

Final Grade Possibilities – 1000 points

Points	Letter Grade
900-1000	A
800- 899	B
700 - 799	C
600 - 699	D
599 or less	F

Grading:
A = 90-100% B = 80-89% C = 70-79% D = 60-69% F = 59% or below
Late Work
Assignments and projects are to be handed in on time. An assignment will be considered late if it is not turned in the day it is due by 11:30pm. Assignments are expected to be dropped in the assignment box on D2L even if you are not in class. You may turn in your assignment early. Late assignments are not accepted unless prior arrangements have been made with the instructor. Assignments and due dates are posted on D2L.

Assignment Submission Format

For written assignments a "page" is defined as:

- 8 ½" x 11" paper
- Times New Roman or Arial 12-point font
- 1-inch margin on all sides
- Put page numbers on the top right-hand side.
- Put your name, title of assignment and date submitted on your paper.

Upload written assignments on the D2L website under the assignment tab.
Papers that do not meet these specifications will not be accepted. With respect to format and style, your paper should conform to the 6th edition APA Manual.

Additional Policies

Handgun Policy

*a) Midwestern State University **ONLY:***

Senate Bill 11 passed by the 84th Texas Legislature allows licensed handgun holders to carry concealed handguns on campus, effective August 1, 2016. Areas excluded from concealed carry are appropriately marked, in accordance with state law. For more information regarding campus carry, please refer to the University's webpage at campus carry rules.

Concealed Carry at Professional Development Schools:

Although MWSU follows the requirements of concealed carry on its campus, this does not negate nor supersede state laws regarding the carrying of firearms on K-12 public school campuses. You may not carry a firearm on a K-12 campus. Some public school campuses have authorized specific personnel to carry a concealed handgun. This does not apply to you.

Schedule

8/24/2021, Tuesday	**Class 308A**	**Course Overview/ Intro**
8/26/2021, Thursday	**Class 308A**	**Science Standards; standards based teaching**
8/30/2021, Tuesday	**Class 308A**	**Collaborative lesson design; data-driven inst. ; research-based inst.**
9/2/2021, Thursday	**Class 308A**	**Collaborative lesson design**
9/7/2021, Tuesday	**Class 308A**	**Research-based instructional strategies**
9/9/2021, Thursday	**Field**	
9/14/2021, Tuesday	**Class 308A**	**Research-based instructional strategies**
9/16/2021, Thursday	**Field**	

8/24/2021, Tuesday	**Class 308A**	**Course Overview/ Intro**
9/21/2021, Tuesday	**Class 308A**	**Research-based instructional strategies**
9/23/2021, Thursday	**Field**	
9/28/2021, Tuesday	**Class 308A**	**Collaborative lesson design**
9/30/2021, Thursday	**Field**	
10/5/2021, Tuesday	**Class 308A**	**Teaching peer review**
10/7/2021, Thursday	**Field**	
10/12/2021, Tuesday	**Class 308A**	**Teaching peer review**
10/14/2021, Thursday	**Field**	
10/19/2021, Tuesday	**Class 308A**	**Teaching peer review**
10/21/2021, Thursday	**Field**	
10/26/2021, Tuesday	**Field**	
10/28/2021, Thursday	**Field**	
11/2/2021, Tuesday	**Field**	
11/4/2021, Thursday	**Field**	
11/9/2021, Tuesday	**MSU Classroom at Burk?**	**Collaborative lesson design**
11/11/2021, Thursday	**Field**	
11/16/2021, Tuesday	**Field**	
11/18/2021, Thursday	**Field**	
11/23/2021, Tuesday	**Class**	
11/25/2021, Thursday	**Field**	
11/30/2021, Tuesday	**Class**	

8/24/2021, Tuesday	**Class 308A**	**Course Overview/ Intro**
12/2/2021 Thursday		
12/7/2021 Tuesday		

References/Scientifically-Based Research/Additional Readings:

Atzori, P. (1996). Discovering CyberAntarctic: A Conversation with Knowbotics Research. *CTHEORY*. Available at: http://www.ctheory.com/

Brown, J.S., Collins, A. & Duguid, S. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32-42.

Derry, S. (1992). Beyond symbolic processing: Expanding horizons in educational psychology. *Journal of Educational Psychology*, 413-418.

Derry, S. (1996). Cognitive Schema Theory in the Constructivist Debate. In *Educational Psychologist*, 31(3/4), 163-174.

Driver, R., Aasoko, H., Leach, J., Mortimer, E., Scott, P. (1994). Constructing scientific knowledge in the classroom. *Educational Researcher* , 23 (7), 5-12.

Ernest, P. (1995). The one and the many. In L. Steffe & J. Gale (Eds.). *Constructivism in education* (pp.459-486). New Jersey: Lawrence Erlbaum Associates,Inc.

Fosnot, C. (1996). Constructivism: A Psychological theory of learning. In C. Fosnot (Ed.) *Constructivism: Theory, perspectives, and practice*, (pp.8-33). New York: Teachers College Press.

Gergen, K. (1995). Social construction and the educational process. In L. Steffe & J. Gale (Eds.). *Constructivism in education*, (pp.17-39). New Jersey: Lawrence Erlbaum Associates,Inc.

Hanley, Susan (1994). On Constructivism. Available at: http://www.inform.umd.edu/UMS+State/UMD-Projects/MCTP/Essays/Constructivism.txt

von Glasersfeld, E. (1996).Introduction: Aspects of constructivism. In C. Fosnot (Ed.), *Constructivism: Theory, perspectives, and practice*, (pp.3-7). New York: Teachers College Press.

Vygotsky, L. (1978). *Mind in Society: The Development of Higher Psychological Processes* MA: Harvard University Press.
Wilson, B. & Cole, P. (1991) A review of cognitive teaching models. *Educational Technology Research and Development*, 39(4), 47-64.

Wilson, B. (1997). The postmodern paradigm. In C. R. Dills and A. Romiszowski (Eds.), *Instructional development paradigms*. Englewood Cliffs NJ: Educational Technology Publications. Also available at: http://www.cudenver.edu/~bwilson/postmodern.html

Standards and Pedagogy

Standards