

University of North Texas at Dallas
Spring 2015
SYLLABUS

EDCI 5310D 090 Pedagogical Content Knowledge in Life Science /3Hrs			
Department of	Teacher Education and Administration	Division of	Education and Human Services
Instructor Name:	Dr. Ratna Narayan		
Office Location:	201 N Dallas 1		
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Email Address:	Ratna.narayan@untdallas.edu		
Office Hours:	Monday 1-5pm Wednesday 2:30 - 4:30 pm, Thursday 2:30 – 5:30 pm, or by appointment		
Virtual Office Hours:	Call or email		
Classroom Location:	Dallas 1 343		
Class Meeting Days & Times:	Monday 5:30 – 8:20 pm		
Course Catalog Description:	This course is designed to allow students to enhance understanding of pedagogical content knowledge in Life Science at the K-8 level.		
Prerequisites:	Admitted to Graduate School		
Co-requisites:	None		
Required Text:	CPO Science Life Science first edition CPO Science Investigations into Life Science		
Recommended Text and References:	Inquiry and the National Science Education Standards A guide for Teaching and Learning.		
Access to Learning Resources:	UNT Dallas Library: phone: (972) 780-3625; web: http://www.unt.edu/unt-dallas/library.htm UNT Dallas Bookstore: phone: (972) 780-3652; e-mail: 1012mgr@fhg.follett.com		

Course Goals or Overview: Participants will gain Pedagogical content knowledge in Life Sciences through which they can professionally develop themselves and teach Life Science effectively at the K-8 level. Weekly topics chosen will be well integrated with grade relevant Life Science topics to stress the development of pedagogical science content knowledge as it pertains to teaching and learning Life Science at the K-8 level.

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Learning Objectives/Outcomes: At the end of this course, the student will be able to:

1	To become familiar with current national and state educational reform efforts those include the National Science Education Standards, the Benchmarks for Science Literacy, and the Texas Essential Knowledge and Skills and to use these standards in lesson and unit planning.
2	To develop and implement Life Science lessons that use student-centered forms of instruction such as cooperative group work, inquiry, the use of writing in science, and methods of teaching for conceptual change.
3	To develop an understanding of life science content and pedagogical content knowledge at the K 8 level.
4	Develop and understanding of students' preconceptions and misconceptions in Life Science content at the K-8 level.

Course Outline

Jan 26 th 2015	The Nature of Science and its Relevance to Science and Science Teaching	SLO's 1
Feb 2nd	Studying Life, living things, classifying living things	2-4
Feb 9th	Organisms and the environment	2-4
Feb 16th	Cell Biology	2-4
Feb 23rd	Cell Structure and function	2-4
Mar 2nd	Genetics	2-4
Mar 9th	Lancaster ISD spring break?	
Mar 16th	UNT Dallas spring break	
Mar 23rd	Controversial issues in science presentation	1-4
Mar 30th	Evolution and Change	2-4
Apr 6th	The Human Body	2-4
Apr 13th	NARST	
Apr 20th	Science Model Presentations	1-4
Apr 27th	Student Presentations	1-4
May 4th	Student Presentations	1-4
May 11th	Final Exam	

COURSE EVALUATION METHODS

GRADING MATRIX

Instrument	Weight / SLOs	Notes
Controversial issues presentation Are the pros and cons well presented? History of the controversial issue? Specific Science content explained, part of resource folder. How to explain to students/ parents Presentation skills	SLOs 1-4 50 20 50 10 <u>10</u> Total 140	Pick a controversial issue in science, get it approved, and present both the pros and cons of the issue regardless of what your individual beliefs are to your peers . Provide some history to the issue, how and why did this issue prove to be controversial? Explain specific science content relevant to the issue. I want at least 5 specific, relevant content terms that will form part of your resource folder. Given the current climate in Texas how would you explain the issue to 8 th grade students/ parents? I am expecting a through presentation, on the date assigned, no re-dos, use a board or a power point and a handout for peers.
Life Science Model Presentation Model and how it is constructed Specific Science content explained, part of resource folder. Presentation	SLOs 1-4 50 50 <u>20</u> Total 120	You will pick a life science concept and construct a model/ working model with materials available easily/ that can be easily replicated. You will present the model to your peers, explain the concept and the science content terms that will form part of the resource folder, Explain the limitations of the model and how to use the model as an assessment tool. I am expecting a through presentation, on the date assigned, no re-dos, use a board or a power point and a handout for peers.
Student Presentations Are the peers engaged Specific Science content explained, part of resource folder. Presentation	SLOs 1-4 40 40 Total 100	Students will develop and engage their peers in an inquiry based, hands-on life science lesson. You will engage your peers, explain the concept and the science content terms that will form part of the resource folder I am expecting a through presentation, on the date assigned, no re-dos, use a board and a handout for peers and a foldable.
Design a PBL based on a Life Science topic	SLOs 1-4 Total 50	Follow the guidelines from Lancaster ISD
Field trip to the zoo 5 complete activities for students to participate in at the zoo.	SLOs 1-4 10 x 5 Total 50	You have permission to take your class on a field trip to the Dallas Zoo. Go visit the Dallas Zoo and design 5 activities for your students to complete on their field trip to the zoo. Provide a rationale for each activity.
Science Resource Folder	SLOs 3 Total 40	You will maintain an electronic science resource folder for new terms you encounter during this class. A format for each page is provided at the back of this syllabus.

Grading Scheme:

500 - 450 = A
449 – 400 = B
399 – 350 = C
349 – 300 = D
Below 299 = F

Class Participation – Expectations

1. ATTENDANCE - Attend all classes, meetings, etc. arriving on time.
2. PREPARATION - Be prepared to discuss assigned readings and submit assignments according to established deadlines.
3. PARTICIPATION - Contribute constructively and respectfully to all discussions and activities.
4. RESPECT – Do not talk while the teacher or another presenter is speaking.
5. ACADEMIC HONESTY - Know and follow course, departmental, program and university policies on assignments and assessments.
6. PROFESSIONALISM - Know and follow departmental, program and university policies expected of PDS students.
7. Participation and Professionalism – CRITICAL!
 - a. Absences and tardies will count toward final grade reduction: 2 absences = one final grade reduction, 4 absences = two final grade reductions, 5 absences = three grade reduction, please make arrangements to retake the class another semester
 - b. Three tardies = 1 absence. (Tardy - must arrive within the first 10 minutes of class)
 - c. Completes assigned readings before coming to class
 - d. Answers questions and participates in class discussions
 - e. Avoid social or unrelated conversation, working on other assignments, using cell phone, checking email, surfing web, playing video games during class time etc.
8. **You are expected to be present in class and on time especially on presentation dates. If you arrive late you will lose 25% of the assigned points.**

University Policies and Procedures

Students with Disabilities (ADA Compliance):

The University of North Texas Dallas faculty is committed to complying with the Americans with Disabilities Act (ADA).

“Any student requesting academic accommodations based on a disability are required to register with Disability Services each semester. A letter of verification for approved accommodations can be obtained from this office. Please be sure the letter is delivered to me as early in the semester as possible. Disability Services is located in DAL 2, Room 204 and is open 8:30-5:00p.m., Monday through Friday. The phone number is (972) 338-1777.”

Students' with documented disabilities are responsible for informing faculty of their needs for reasonable accommodations and providing written authorized documentation. For more information, you may visit the Office of Disability Accommodation/Student Development Office, Suite 115.

Student Evaluation of Teaching Effectiveness Policy:

The Student Evaluation of Teaching Effectiveness (SETE) is a requirement for all organized classes at UNT. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I get from students, as I work to continually improve my teaching. I consider the SETE to be an important part of your participation in this class.

Assignment Policy:

All assignments are compulsory. There are no exceptions to this rule. Please refer to the assignment expectations document for details about each assignment and its due dates. Late assignments will result in a 5 point reduction for each day late.

If I am not satisfied with an assignment response, I reserve the right to deduct points and return it to you so you may improve on it and resubmit to get some of the deducted points back if the work is deemed satisfactory. All assignments are due by 5pm May 11th 2015 after which NO assignments will be accepted or graded.

Exam Policy:

Exams should be taken as scheduled. No makeup examinations will be allowed except for documented emergencies (See Student Handbook).

Academic Integrity:

Academic integrity is a hallmark of higher education. You are expected to abide by the University's code of conduct and Academic Dishonesty policy. Any person suspected of academic dishonesty (i.e., cheating or plagiarism) will be handled in accordance with the University's policies and procedures. Refer to the Student Code of Conduct at http://www.unt.edu/csr/student_conduct/index.html for complete provisions of this code.

Please take the time to go through this link. If I find you have plagiarized from any source without giving them due credit I will give you a zero for that assignment.

Bad Weather Policy:

On those days that present severe weather and driving conditions, a decision may be made to close the campus. In case of inclement weather, call UNT Dallas Campuses main voicemail number (972) 780-3600 or search postings on the campus website www.unt.edu/dallas. Students are encouraged to update their Eagle Alert contact information, so they will receive this information automatically.

Attendance and Participation Policy:

The University attendance policy is in effect for this course. Class attendance and participation is expected because the class is designed as a shared learning experience and because essential information not in the textbook will be discussed in class. The dynamic and intensive nature of this course makes it impossible for students to make-up or to receive credit for missed classes. Attendance and participation in all class meetings is essential to the integration of course material and your ability to demonstrate proficiency. Students are responsible to notify the instructor if they are missing class and for what reason. If I have not heard from you and receive supporting documentation for your absence, I shall consider it an unexplained absence. Two such absences will reduce your overall grade by a letter grade irrespective of the points you might make. Students are also responsible to make up any work covered in class. It is recommended that each student coordinate with a student colleague to obtain a copy of the class notes, if they are absent. If you have missed a class, please make an appointment to meet me so we can determine what needs to be done to make up the lost time. If you are absent on a presentation day you will get zero points for that assignment.

Diversity/Tolerance Policy:

Students are encouraged to contribute their perspectives and insights to class discussions. However, offensive & inappropriate language (swearing) and remarks offensive to others of particular nationalities, ethnic groups, sexual preferences, religious groups, genders, or other ascribed statuses will not be tolerated. Disruptions which violate the Code of Student Conduct will be referred to the Center for Student Rights and Responsibilities as the instructor deems appropriate.

Optional Policies:***Use of WebCT/Blackboard***

I will expect you to use Blackboard to upload your assignments and I will give you feedback on those on Blackboard. Please monitor these for additional comments I give or information I require.

Use of Cell Phones & other Electronic Gadgets in the Classroom

Please do not use your cell phones in class. If it is an emergency, I will permit you to leave class and take the call. **If I see you texting or playing videogames or checking your email in class I will drop you a letter grade.**

Food & Drink in the Classroom

I do not mind food and drink in the classroom, however when we are conducting an activity, I will expect all food and drink to be put away immediately. All food and drinks must be properly disposed of.

Use of Laptops

If I need you to use a laptop during class I will take you to the computer lab.

Grade of Incomplete, "I"

A grade of incomplete, "I" will be given only under extenuating medical circumstances.

Sample of pages in Science Resource Folio

Science Concept: Force

Comment [O1]: I want this to be a single vocabulary term

Spanish: Fuerza

Comment [O2]: Translate to spanish

Draw what you think the term force means here
(this will be your drawing or that of a child that you can scan in here.) Describe what you have drawn.

My understanding of the term: it is some kind of pull or push, power

Comment [O3]: You define what the word means to you , in your own words

Definition: A **force** is a push or pull upon an object resulting from the object's *interaction* with another object. Whenever there is an *interaction* between two objects, there is a force upon each of the objects. When the *interaction* ceases, the two objects no longer experience the force. Forces only exist as a result of an interaction. Interaction means how one object affects the other

Comment [O4]: The scientific definition of the vocabulary word

Source of definition: <http://www.physicsclassroom.com/class/newtlaws/Lesson-2/The-Meaning-of-Force>

Comment [O5]: Where you got the definition from

Units: It is measured in the SI unit of Newtons and represented by the symbol **F**.

Comment [O6]: Units of measurement where relevant

Formula: $F = m \times a$ where m = mass and a = acceleration

Comment [O7]: Formula where relevant

Related terms: mass, acceleration, newton, balanced and unbalanced forces, Newton's Laws, inertia, gravitational force

Comment [O8]: At least 5 related terms

TEKS: 6 (A,B,C,D)

Comment [O10]: Relevant TEKS

Competency: Competency 007 (Forces and Motion): The teacher understands forces and motion and their relationships.

Comment [O11]: Comes from the prep manual for the EC-6 generalist http://cms.texas-ets.org/files/5914/1881/7139/core_subjects_ec_6_291.pdf

Lesson plan with activity: <http://www.discoveryeducation.com/teachers/free-lesson-plans/rules-of-forces-and-motion.cfm> .The activity involves toy cars and ramps and discussing the effects of gravity and friction

Comment [O12]: Lesson plan with an activity based on the vocab concept. Paste the link to the lesson plan. Describe briefly what the activity is

You tube video: <https://www.youtube.com/watch?v=2OJbztWitk>

Comment [O13]: This can be a song, rap, video about the topic

Question from the Generalist or Starr test:

An object is being acted on by a force of 20 N directed to the left and a force of 30 N directed to the right. What is the net force acting on the object?

- A. 10 N to the left
- B. 50 N to the left
- C. 10 N to the right
- D. 50 N to the right

Relation to everyday life:

Picture 1: What am I looking at: Children in a tug of war trying to pull the rope towards them. Force = pull, also friction



Source: http://www.fourseasonsamusements.com/assets/root/categories/Photo%20Opp%20and%20Other/tug_of_war.jpg

Picture 2: STEM application. What am I looking at: Parachute drifting towards the earth because of the earth's gravitational force, the broad chute slows down its descent.

Comment [O14]: If this isn't available then you can replace it with common misconceptions about the topic or something else

Comment [O15]: Picture of how the concept is related to everyday life with a description of how it is relevant

Comment [O16]: The picture must be of good quality, must not be grainy or unclear

Comment [O17]: Where did you get the picture from?

Comment [O18]: How is this related to a STEM application. Describe in a line or two



Source: <http://www.planetstillalive.com/wp-content/uploads/2011/12/Parachute-AcrobaticsA-7-1024x689.jpg>

Prepared by: xxxxxxx and date

Comment [O19]: Source of the picture

Comment [O20]: Your name and that of your partner goes here and the date you completed it.