



**University of North Texas at Dallas**  
**Fall 2011**  
**SYLLABUS**

|  |  |  |
|--|--|--|
| <b>EDEE 4330D 091: Science Grades EC-6</b> |  | <b>3Hrs</b>                              |
| Department of                              | Teacher Education  | Division of Education and Human Services |
| <b>Instructor Name:</b>                    | Dr. Ratna Narayan  |  |
| <b>Office Location:</b>                    | 201 N Dallas 1   |  |
| <b>Office Phone:</b>                       | 972 780 1340   |  |
| <b>Email Address:</b>                      | Ratna.narayan@unt.edu  |  |
| <b>Office Hours:</b>                       | Monday 12 – 3pm, Tuesday 1pm-3pm, by appointment   |  |
| <b>Virtual Office Hours:</b>               |  |  |
| <b>Classroom Location:</b>                 | Dallas 1 room 344  |  |
| <b>Class Meeting Days &amp; Times:</b>     | EDEE 4330D 090 T 4:30-7:20 pm<br>EDEE 4330D 091 W 1:00-3:50 pm   |  |
| <b>Course Catalog Description:</b>         | The purpose of this course is to provide teacher candidates with the subject matter, background, and material organization for an integrated science program in the primary/elementary school. Students experience first-hand the scope and sequence of science education in a primary/elementary/middle school setting. |  |
| <b>Prerequisites:</b>                      |  |  |
| <b>Co-requisites:</b>                      |  |  |
| <b>Required Text:</b>                      | <i>Peters, Joseph M. and Stout, David L. (2011). Science in Elementary Education: Methods, Concepts, and Inquiries. (11<sup>th</sup> Ed.). Boston, MA: Pearson. ISBN -13: 978-0-13-503150-6</i>  |  |
| <b>Recommended Text and References:</b>    | Articles will be uploaded on Blackboard as and when required.  |  |
| <b>Access to Learning Resources:</b>       | UNT Dallas Library:<br>phone: (972) 780-3625;<br>web: <a href="http://www.unt.edu/unt-dallas/library.htm">http://www.unt.edu/unt-dallas/library.htm</a><br>UNT Dallas Bookstore:<br>phone: (972) 780-3652;<br>e-mail: <a href="mailto:1012mgr@fheg.follett.com">1012mgr@fheg.follett.com</a>                             |  |
| <b>Course Goals or Overview:</b>           |  |  |
|  | The goal of this course is provide teacher candidates with the knowledge, skills and dispositions as a basis for making decisions in respect to teaching elementary school science.<br><br>The knowledge, skills and dispositions developed in this course are delineated in a variety of ways,                          |  |

|  |   |
|--|---|
|  | including student learning outcomes, assessments, assignments, and various course activities. They are also developed in a manner consistent with recommendations of the National Research Council's National Science Education Standards and requirements of the Texas State Board for Educator Certification. |
| <b>Learning Objectives/Outcomes:</b> At the end of this course, the student will |   |
| 1  | Be able to demonstrate the use of instructional strategies and teaching activities to teach the science content knowledge included in Texas' Essential Knowledge and Skills (The TEKS). EC-6 Science TEKS   |
| 2  | Learn to teach science activities or lessons at the elementary level by a variety of approaches (discovery, inquiry, decision-making, and problem solving) and in a variety of grouping arrangements. EC-6 Science TEKS & NSES Standards  |
| 3  | Plan and teach elementary science activities and lessons with adaptations for minority populations and students with special needs EC-6 Science TEKS & NSES standards   |
| 4  | Learn to apply technology to elementary school science by identifying, describing, and using instructional software, Internet and other computer applications than would enhance instruction. EC-6 Science TEKS & NSES standards  |
| 5  | Complete classroom observations and related tasks in field-based settings. EC-6 Science TEKS & NSES Standards   |
| 6  | Plan science activities and lessons and teach them to students in field-based settings. EC-6 Science TEKS NSES standards  |
| 7  | Use reflective analysis to improve their teaching. EC-6 Science TEKS & NSES standards   |
| 8  | Integrate the various areas of science as well as integrate science with other subject areas at the elementary level. EC-6 Science TEKS & NSES standards  |

**Course Outline**

This schedule is subject to change by the instructor. Any changes to this schedule will be communicated both verbally in class as well as through Blackboard

| TOPICS   | TIMELINE                        |
|--|---------------------------------|
| Nature of Science and Science Process skills<br>Introduction to Field-Based Experiences and Teaching Science in the Elementary School, examining TEKS, TAKS and NSES Standards | August 30 <sup>th</sup> 2011    |
| The Scientific Method, Inquiry-based Science teaching and Learning.<br>TEKS: K.2, 1.2,2.2, 3.2, 4.2, 5.2, 6.2 (Inquiry)<br>NSES: Inquiry                                       | September 6 <sup>th</sup> 2011  |
| Constructivism in the Elementary Classroom<br>Planning and Teaching Science: Activities, Lessons, and Units, 5E model  | September 13 <sup>th</sup> 2011 |
| Science Safety in the Elementary Classroom, MSDS sheets, safety contracts  | September 20 <sup>th</sup> 2011 |
| Assessment in the Science Classroom<br>TeXes, PPR, Content exams   | September 27 <sup>th</sup> 2011 |
| Professional development opportunities for elementary science teachers   | October 4 <sup>th</sup> 2011    |
| Multicultural Science Education  | October 11 <sup>th</sup> 2011   |
| Use of Models in the elementary science classroom<br>Student Science Model Presentations   | October 18 <sup>th</sup> 2011   |

|   |                                |
|---|--------------------------------|
| Science Society and Technology                                      | October 25 <sup>th</sup> 2011  |
| Scientific Literacy, reading and writing science, science notebooks | November 1 <sup>st</sup> 2011  |
| Controversial issues in science and science teaching                | November 8 <sup>th</sup> 2011  |
| Action research in the elementary science classroom                 | November 15 <sup>th</sup> 2011 |
| Technology in the elementary science classroom                      | November 22 <sup>nd</sup> 2011 |
| Inquiry Project presentations                                       | November 29 <sup>th</sup> 2011 |
| Last class. Inquiry Project Presentations                           | December 6 <sup>th</sup> 2011  |
| Final examinations  | December 10-16 <sup>th</sup>   |

### Course Evaluation Methods

The course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course

#### Assignments –

1. Weekly Activities– Readings and other activities such as the science story that are assigned weekly throughout the semester.
2. Reflection Papers– Reflective writings that serve to integrate your experiences in the classroom and in the field during the semester.
3. Field-based activities such as –  
maintaining an observation manual,  
preparing and teaching a science concept with a working science model you have designed and constructed,  
teaching a small group of students a science concept using hands-on inquiry based activities,  
designing a science fair experiment, conducting and presenting it to your peers in the classroom as well as in the field ,science in your everyday life presentation
4. Preparing rubrics for assessment activities
5. Final Exam

**Please note: I expect you to complete all the assignments in a timely fashion. There will be no substitutions unless I approve of them. Two professional development opportunities will be offered; if you are unable to avail of these an alternate assignment will be provided.**

#### 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 reductions.
  - 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.

#### Grading Matrix:

| Instrument  | Point Value | Total |
|---|-------------|-------|
| Reflection papers / assignments                       | 10 x 10     |       |
| Field –based activities                               |             |       |
| -Science model, develop and teach and present         | 40          |       |
| - small group teaching                                | 50          |       |
| - science fair experiment, develop, conduct and teach | 50          |       |
| - science in everyday life presentation               | 30          |       |
| Final Exam  | 20          |       |
| Class participation                                   | 10          | 300   |

**Grade Determination:**

- A = 300 - 270 points
- B = 269 – 240 points
- C = 239 – 210 points
- D = 209 – 180 points
- F = below 179 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). 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 or call Laura Smith at 972-780-3632.

**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:**

Reflection papers must be uploaded to Blackboard by noon the day of class. All other assignments should be submitted in an assignment folder. Put your name, course and contact information on the upper right front cover. Use this folder to submit assignments for grading. I will review the assignment and return the folder to you. 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.

**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/csrr/student\\_conduct/index.html](http://www.unt.edu/csrr/student_conduct/index.html) for complete provisions of this code.

**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](http://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.

**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 reflection papers 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 circumstances.

## Assignments

### 1. Reflection papers/ assignments: 10 x 10 = 100 points

These might take the form of reflection papers, assignments such as drawing up a safety contact or presenting to the class the bio of a multicultural scientist, or responding to a book chapter etc. that will be assigned relevant to the topic covered in class that week. Reflection papers will be a minimum of 2 pages double spaced 12 font. Reflection prompts will be provided to help you write them. I expect the reflections to be written in your words, if you have referred to a journal, website or book please cite it in the appropriate fashion. I will check your writing for its authenticity through Turnitin software, so please make sure you present your original thoughts in your own words. You have a week to turn in your assignment. For instance, if your class is on Tuesday 30<sup>th</sup> August at 4,30 pm, your first reflection paper / assignment will be due on the 6<sup>th</sup> Sept at 4pm. Late assignments will be deducted points each day.

If I believe your work requires improvement, I will let you know as to what I need you to do to make up the points deducted.

All reflection assignments will be posted on Blackboard under the discussion section. You will post your response either directly under the prompt or upload a word document. Please make sure the document is spell checked before submitting it.

In some cases, I will expect you to comment on two of your peer's entries. In that case I will give you two days after the due date to upload your comment. Comments must be thoughtful and merely writing "It's nice" won't cut it.

### 2. Field Assignments

These are assignments you will carry out in the field with the assistance of the students in the classroom. If required please show your teacher a copy of the syllabus so they know what is required from you with regards to these assignments. While you complete these assignments, please ensure you are not intrusive or inconsiderate of the teacher teaching her lesson.

#### a. Science in your everyday life presentation. 30 points

The purpose of this assignment is to determine what elementary students think science is and how it pertains to their daily lives. This assignment will take the form of a power point that you will either email me as an attachment or upload to Blackboard (to be determined later depending on the capacity of Blackboard). The target audience is a minimum of 5 elementary students of different grades as well as 5 adults all of different genders and ethnicities. One of the adults can be a professor teaching a different class you are taking or a peer in another class or your mentor teacher at your field experiences. Here are the directions. Please ask each student/adult the following:

- 1) What they think science is, in their own words
- 2) Why people must study science, or how science is useful
- 3) Give 5 examples of science in their everyday life.

Your power point will consist of a number of slides; I would do at least 3 slides per student, one for each of the questions above. On the third slide, you might paste pictures representative of what the students/adults said.

You will also attach three sides for your own responses from when we do this on the first day of class.

The last part of this assignment assumes you are elementary science teacher teaching third grade students. Please generate a comprehensive plan of the steps you will take to make sure your students realize the importance of science in their everyday lives. Why do you think this is important? Please detail the steps and what you hope to accomplish with these.

#### b. Science Fair experiment 50 points

The rationale behind this assignment is to give you the experience of generating, conducting and presenting a science fair type experiment. You will try and involve a few students in your class in your project. If you do, you

will first discuss this with the mentor teacher you have been assigned to at the school as well as with me. Once you have completed your experiment, you will make a power point presentation and print out a copy and display it at your school and get feedback from the elementary students and teachers. You will also present it to your peers the last 2 days of class.

PLEASE RUN YOUR IDEAS BY ME AND GET WRITTEN PERMISSION BEFORE EMBARKING ON THE EXPERIMENT.

For this assignment, you will explore a question related to a science concept in the elementary school. You will formulate the question as a hypothesis, set up the experiment, collect data and record it, both as narratives and pictures, analyze that data and present the results in the form of a short paper. Please include a scientific reason for your results. A short power point presentation will be made to the class. The assignment will also have a reflective component.

It is my intention that all the projects be displayed in the foyer of building 1; we will see how that goes.

**c. Small group teaching: 50 points**

You will design a hands-on lesson and teach a small group of students (4-5) if possible. Please let the mentor teacher pick the students and the topic. You will design an intervention that tests the students' initial knowledge base and through hands-on activities extends it or fills in the gaps. An appropriate assessment must also be administered. Please discuss the topic assigned with me and get approval on your lesson prior to teaching it at the school. The assignment will also have a reflective component.

**d. Science Model: 40 points**

You will create a science model with easily available materials and present it to your students at the school you are assigned to as well as to your peers in class. Please note your science model must be used as a teaching and assessment tool. A chart or booklet will accompany the model. Please get approval from me for your model before you proceed.

**e. Final Exam: 20 points**

Details to follow

**In addition:**

It is my endeavor that all my students are successful in passing the PPR and content exams and enhancing their resumes in their efforts to secure good employment. Here are two professional development opportunities I would like you to avail of. You can add these on your resumes. Neither of these will cost you any money and if you are unable to attend these, the alternate assignment for each is a 10 page paper which I would be happy to discuss with you.

**a. Alternate certifications.**

We will be offering the following alternate certifications in a workshop that will include the following:

**1. Project Wild Suite (Project Wild, Aquatic Wild, Science and Civics, Growing Up wild)**

*Project WILD* is one of the most widely-used conservation and environmental education programs among educators of students in kindergarten through high school. It is based on the premise that young people and educators have a vital interest in learning about our natural world. <http://www.projectwild.org/>

The *Project WILD Aquatic K-12 Curriculum and Activity Guide* emphasizes aquatic wildlife and aquatic ecosystems.

The *Project WILD Aquatic K-12 Curriculum and Activity Guide* emphasizes aquatic wildlife and aquatic ecosystems. <http://www.projectwild.org/ProjectWILDK-12AquaticcurriculumandActivityGuide.htm>

*Science and Civics: Sustaining Wildlife* is designed to serve as a guide for involving students in environmental action projects aimed at benefitting the local wildlife found in a community. It involves young people in decisions affecting people, wildlife, and their shared habitat in the community.

<http://www.projectwild.org/ScienceandCivics.htm>

*Growing Up WILD* is an early childhood education program that builds on children's sense of wonder about nature and invites them to explore wildlife and the world around them.

<http://www.projectwild.org/growingupwild.htm>

## **2. Training and certification in how to use the solar telescope.**

The 3RF campus is an astronomy campus, they have several telescopes. Caryn will bring several scopes with her and teach our students how to use the scopes as well as the curriculum materials in a classroom. Once they are certified, when they have their own classrooms, and they are teaching a solar unit, they can call Caryn @ 3RF and she will send them a trunk with the solar scopes and curriculum materials for them to use.

## **3. GLOBE Training.**

*The Global Learning and Observations to Benefit the Environment (GLOBE) program* is a worldwide hands-on, primary and secondary school-based science and education program. GLOBE's vision promotes and supports students, teachers and scientists to collaborate on inquiry-based investigations of the environment and the Earth system working in close partnership with NASA, NOAA and NSF [Earth System Science Projects \(ESSP's\)](#) in study and research about the dynamics of Earth's environment. Currently there are more than **54,000** GLOBE-trained teachers representing over **24,000** schools around the world. Over **1.5 million students** have participated in GLOBE, contributing more than **22 million** measurements to the GLOBE database for use in their inquiry-based science projects. <http://globe.gov/about>

## **4. Leopold project**

The Leopold Education Project (LEP) is an innovative, interdisciplinary, critical thinking, conservation and environmental education curriculum based on the classic writings of the renowned conservationist, Aldo Leopold. <http://www.lep.org/about/>

**You will receive will receive 37 hours of CPE, at least 16 of the 40 hours needed to be certified by TEA as environmental science educators, 7 curriculum books and 8 certifications. The training will be offered on October 1<sup>st</sup> Saturday from 8 am – 4.pm and for the 3 hours during class time the following Tuesday / Wednesday. Please note that each of these certifications originally costs 75-150\$ each.**

## **b. Attending the Conference for the Development of Science Teachers (CAST)**

The Conference for the Advancement of Science Teachers is organized by the Science Teachers Association of Texas and is held in Dallas at the Convention Center Nov 17-19<sup>th</sup> 2011. <http://www.statweb.org/>

It is a great opportunity for you to improve your content knowledge and pedagogical skills by attending short courses, workshops, jam sessions and long courses.

The cost of both these opportunities is 25\$ per student per event, BUT it is totally free to you if you fill in the attached paper work and submit it to me ASAP. Student life at UNT Dallas has a grant that will pay for both events. Please let me know ASAP if you cannot take advantage of these opportunities, I will be happy to discuss the alternative assignment with you.