



Science Inquiry for Children in the Natural Environment  
EDUC 551

Summer xxxx

Instructor info

Monday and Wednesday 9:00 AM - 12:45 PM\*

Room TBA

\*(Two trips to Tiorati Lake 9:00 AM - 3:00 PM - see calendar for schedule)

Course goals & requirements

Students investigate the natural environment, at Bank Street and the Tiorati Workshop for Environmental Learning in Harriman State Park, to focus on the theory and practice of natural science. Students conduct inquiries under the principle that teachers should learn significant science concepts in ways that they are expected to teach.

Students investigate materials, science concepts, and teaching strategies that are appropriate for preschool and elementary school learners. Class sessions include field explorations at the Tiorati Field Site

**Course goals**

1. Learn significant science content through participation in several extended inquiries as a model for your own classrooms;
2. Know how to inquire about the living environment & the physical environment through observation, experiment, & consulting expert knowledge;

3. Recognize characteristics of organisms and properties of matter;
4. Understand strategies to establish a science learning community in a classroom;
5. Recognize that science is a process of understanding; it is not “facts” about the natural world.

### **Course Requirements/Assignments**

1. Contribute to the science inquiries in this classroom with the aims of increasing your scientific understanding, improving your skills at using scientific tools, and bettering your understanding of teaching & learning; (12 PERCENT)
2. Interactive notebook - You will create a notebook that includes information about each of the day’s investigations; (8 PERCENT)
3. Reflections on the weeks activities will be submitted each week (four weeks). These will then be inserted into your notebook (est 500 words); TOTAL 16 PERCENT)
4. A science autobiography (4 PERCENT)

What are your memories of your science learning experiences? Were they positive, negative, or mixed? This is an opportunity to examine your attitude toward science and explore how your teachers influenced that attitude. What does science mean to you? How do you feel about it? Are you satisfied with your level of knowledge and confidence? What teaching experiences have you had (are you teaching now?)

This is a chance for me, and others in the class, to learn about you and also for you to learn about yourself. What is important here is an honest personal examination, to help you to become a more effective teacher. Est 500 words

5. Revisit the Science Autobiography (4 PERCENT)  
Re-read your Science Autobiography. How have your perspectives on science and science teaching changed this semester? Est 500 words
6. Read the textbook. You will submit reflections on each third of the text 3 times during the course (in about 500 words, reflect on the reading of the text - what seemed most important, what new ideas did you gain from this reading — do not just summarize the text); (12 PERCENT TOTAL)

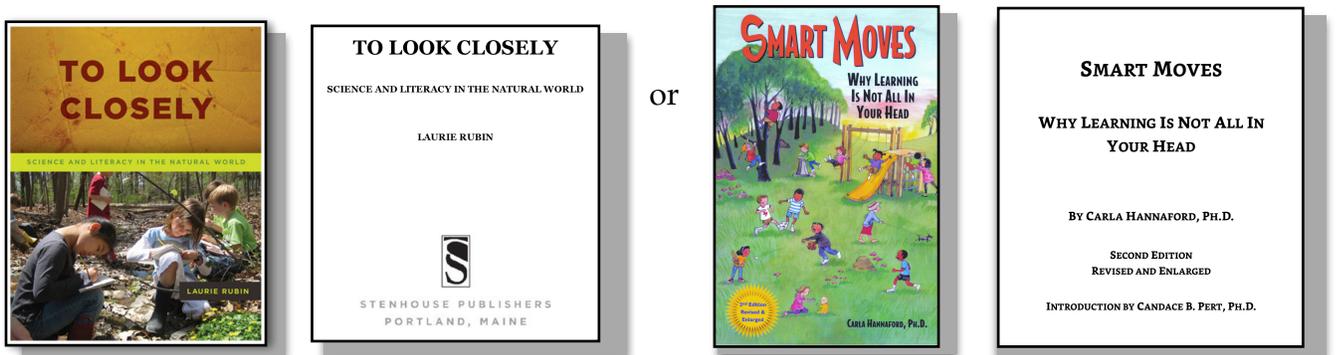
### **7. *The Tiorati Nature Center - 2 Field trips***

#### **A field trip to a nature center**

An objective of this course is to know how to plan & conduct field trips concerning on-going classroom work, and know how to integrate the work of the field trips into the classroom. To this end, we will have two all-day field trips at the Tiorati Center for Environmental Learning in Bear Mountain State Park. (16 PERCENT TOTAL)

8. FINAL PRESENTATION - SHARING OF AN IMPORTANT CONCEPT LEARNED IN THIS CLASS (This should reflect and investigation as well as a connection to other aspects of the elementary school curriculum). (8 PERCENT)
- The final presentation should include a movie (about 2 minutes long) suitable for an elementary school audience that explains one scientific concept that you feel is important for them to understand.
  - There should be an accompanying write-up (about 1 page that can be inserted into your notebook) that includes
    - The Big Idea
    - A list of 4 books that would be suitable for children to read that relate to this topic
    - A brief field trip possibility
    - How this topic might be integrated into a literacy topic
    - How this topic might be integrated into a math topic
9. Attendance is required (20 PERCENT) (if there is more that one unexcused absence you cannot receive an A in this class).

### The Text



Also, You will need an 8" x 11" spiral bound notebook (70 page size is large enough) or it can be electronic if you prefer.



DATE	GENERAL TOPIC	INVESTIGATION	ASSIGNMENTS
<b>1A Session FIRST HALF</b> 9 - 10:50 AM	INTRODUCTIONS, SCIENCE ACTIVITY, NOTEBOOK PLAN, FIELD TRIP INFORMATION	INVESTIGATION - MODEL INQUIRY Sharing and Intros	
<b>1B Session HALF</b> 11:05 - 12:45 PM	IT ALL STARTS WITH ROCKS Big Idea - Rocks were once something else - liquid, sediment, other type of rock.	CRYSTALS AND ACID RAIN WEATHERING	
<b>2A Session FIRST HALF</b> 9:30 - 10:50 AM	MEET AT INWOOD PARK	ROCKS IN NATURE	00 SCIENCE AUTOBIOGRAPHY DUE
<b>2B Session SECOND HALF</b> 11:05 - 12:45 PM	TREES How to investigate trees in the forest.	Tree measurements and analysis.	Week 1 reflection due Sunday (Rocks and Inwood Park).

DATE	GENERAL TOPIC	INVESTIGATION	ASSIGNMENTS
<b>3A Session FIRST HALF</b> 9:30 - 10:50 AM	<b>MEET IN CENTRAL PARK (DANA DISCOVERY CENTER)</b>	Birds in the ecosystem Measuring water quality.	01a REFLECTION ON THE FIRST THIRD OF THE TEXTBOOK (Intro through Chapter 3 - DUE by Sunday evening)
<b>3B Session SECOND HALF</b> 11:05 - 12:45 PM	Sounds in nature	COLLECTING DATA about nature	
<b>4A J Session (Tiorati starts at 8:30 AM)</b>	<b>TIORATI NATURE CENTER - ENVIRONMENTS</b>	EXPLORING ECOSYSTEMS	Week 2 reflection due Sunday (First Tiorati Trip).
<b>4B Session SECOND HALF (Tiorati ends at 3PM)</b>	ENVIRONMENTS	EXPLORING ECOSYSTEMS	01b REFLECTION ON THE SECOND THIRD OF THE TEXTBOOK (Chapters 4 - 6 DUE by Sunday)
<b>5A Session FIRST HALF</b> 9 - 10:50 AM	WATER STUDIES Meet at The River Project Big Idea - Water is an important resource that affects human survival.	ECOLOGY OF AN ESTUARY <b>THE RIVER PROJECT</b>	Meet at The River Project
<b>5B Session SECOND HALF</b> 11:05 - 12:45 PM	The Hudson River		
<b>6A Session FIRST HALF</b> 9 - 10:50 AM	Meet in the classroom	Looking at Street Trees	
<b>6B Session SECOND HALF</b> 11:05 - 12:45 PM	Poster review	Bioswales	Week 3 Reflection due Sunday (The River Project and Street Trees)
<b>7A Session (Tiorati starts at 8:30 AM)</b>	<b>TIORATI</b>		
<b>7B Session (Tiorati ends at 3PM)</b>			01c REFLECTION ON THE THIRD THIRD OF THE TEXTBOOK DUE (Chapters 7 - Postscript by Sunday)

DATE	GENERAL TOPIC	INVESTIGATION	ASSIGNMENTS
<b>8A Session</b> 9:30 - 11 AM	Meet at NYU East Building 4th Floor - bring a picture ID LOOKING AT PLANTS Big idea - Nature can be a rich source of science study in elementary schools.	REPRODUCTION OF PLANTS PROJECT LEARNING TREE	
<b>8B Session SECOND HALF</b> 11:05 - 12:45 PM	PROJECT LEARNING TREE	PROJECT LEARNING TREE	Week 4 Reflection due Sunday (Second Tiorati and Project Learning Tree - final reflection assignment)
<b>9A Session FIRST HALF</b> 9 - 10:50 AM	Meet at Bank Street INTERACTIVE NOTEBOOKS	Share notebooks.	08 share your notebook in class
<b>9B Session SECOND HALF</b> 11:05 - 12:45 PM	SCIENCE CONTENT VERUS PROCESS CONTENT	METHODS OF ASSESSMENT OF SCIENCE CONTENT	09 The movie and the lesson plan/discussion should be submitted by this date so that it can be incorporated in the presentation on 10A
<b>10A Session FIRST HALF</b> 9 - 10:50 AM	Meet at Bank Street PRESENTATIONS (UNIT PLAN, MOVIE)	PRESENTATIONS - show the movie and present the eBook with the movie and the lesson plan.	
<b>10B Session SECOND HALF</b> 11:05 - 12:45 PM	PRESENTATIONS (UNIT PLAN, MOVIE)	PRESENTATIONS - show the movie and present the eBook with the movie and the lesson plan.	10 Revisit your Science Autobiography

### Environmental Ethics

Recycling. Tiorati Workshop makes every reasonable effort to conserve, re-use and recycle materials. The New York State Office of Parks, which manages the Park, does not recycle. Bring your food in recyclable containers. In disposing, rinse these containers (especially, glass, plastic and metal beverage containers) and separate from the “trash.”

Cups. Please name your cup so that you may use it again in the course of a day.

I am trying to balance hygiene & environmental costs. As I understand it, paper cups have a high environmental cost in their production. Styrofoam cups have a high environmental cost in their disposal. Hygiene requires hot water to assure cleanliness. I am trying to move from disposable to reusable cups. At the end of each class day, I will run hot water until it is hot enough to clean the ceramic ware.

Use of paper. Whenever possible, use two sides of printed sheets, though, to ease the burden on the eyes of the instructor, present handwritten papers on single-sided pages.

Collecting specimens. I have been thinking about the way children and adults impulsively collect materials from the wild. For this course, we need to develop a collections rule that balances our need to understand with our self-interest in protecting it.

Precautions in the natural environment. We are guests in the natural spaces around Tiorati (as well as in City Parks). We venture into the meadows and forests to discover for ourselves the workings of the natural world. It is extraordinarily important for children to have constructive experiences with nature.

You are safe around Tiorati provided that you are alert to the hazards, four in particular.

- *Snakes.* The snakes we have seen are harmless garter snakes. Nevertheless, we urge you (both adults and children) not to approach or handle snakes unless you are an expert. We do not want anyone to suffer from a case of mistaken identify, however unlikely.

- *Ticks.* There are many kinds of ticks. Ticks are active all year 'round, though particularly in the warm weather. Ticks feed on the blood of animals. Since deer ticks may carry Lyme Disease, you should dress to prevent the tick from gaining access to your flesh. Wear sturdy shoes and light-colored slacks. Tuck the trouser legs into your socks when you are outdoors. Shower, rubbing well over your whole body with a wash cloth, and check your whole body in front of a full-length mirror at the end of the day.

- *Rabies.* Some animals in this area may have contracted rabies. It is not something to worry about because no recent cases have been reported. Nevertheless, we should all recognize the signs. A rabid animal behaves strangely. E. g., nocturnal animals may appear in the daytime; animals that would normally flee people may approach people. If you see a fox, raccoon or skunk (or other nocturnal animal) in broad daylight, or if such an animal

approaches you, move away quickly. In any event, you should never touch a wild animal.

- *Bears.* We have evidence that Black Bears occasionally visit this area.

Remember two things: bears are wild animals; they should never be treated as pets. Bears see poorly, so the best thing to do is to stand still or walk slowly away; running invites a bear to chase; bears can run faster than you. Need we say more?

Recycling. I make every reasonable effort to conserve, re-use and recycle materials. I urge you to do likewise in this room. On behalf of Bank Street College Staff Council, I occasionally check the garbage disposal system to ensure that the streams of garbage are handled consistently & leave the building properly identified.

Use of paper. Whenever possible, use two sides of printed sheets, though, to ease the burden on the eyes of the instructor, present handwritten papers on single-sided pages.

Weather alert: If the news forecasts a weather disaster (which I certainly do not expect), I will be reluctant to send a bus of students onto the highway, and will postpone the class. I expect to decide whether to cancel by 7 a. m. the morning of the session. I will announce the postponement,

- via email on the Bank Street Classroom Management System
- you can call my cell if concerned 917 885-7916

=====

**Bank Street College's graduate courses seek to address the standards established by the following Specialized Professional Associations (SPAs) in the preparation of teachers and school leaders:**

- Association for Childhood Education International (ACEI)
- National Association for the Education of Young Children (NAEYC)

The specific SPA standards addressed by this course are indicated below.

**ACEI**

**1.0 Development, Learning and Motivation:** Candidates know, understand and use the major concepts, principles, theories, and research related to development of children and young adolescents to construct learning opportunities that support individual students' development, acquisition of knowledge and motivation.

**2.2 Science:** Candidates know, understand and use fundamental concepts of physical, life and earth/space sciences. Candidates can design and implement age-appropriate inquiry lessons to teach science, to build student understanding for personal and social applications and to convey the nature of science.

**3.1 Integrating and applying knowledge for instruction:** Candidates plan and implement instruction based on knowledge of students, learning theory, connections across the curriculum, curricular goals and community.

**3.2 Adaptation to diverse students:** Candidates understand how elementary students differ in their development and approaches to learning, and create instructional opportunities that are adapted to diverse students.

**3.3 Development of critical thinking and problem solving:** Candidates understand and use a variety of teaching strategies that encourage elementary students' development of critical thinking and problem solving.

**3.4 Active Engagement in Learning:** Candidates use their knowledge and understanding of individual and group motivation and behavior among students at the K-6 level to foster active engagement in learning, self motivation, and positive social interactions and to create supportive learning environments.

**3.5 Communication to foster collaboration:**

Candidates use their knowledge and understanding of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the elementary classroom.

**4.0 Assessment for Instruction:** Candidates know, understand and use formal and informal assessment strategies to plan, evaluate and strengthen instruction that will promote continuous intellectual, social, emotional and physical development of each elementary student.

## NAEYC

### Standard 1: Promoting Child Development and Learning

**1a.** Knowing & understanding young children's characteristics & needs, from birth thru age 8.

**1b.** Knowing & understanding the multiple influences on early development & learning.

**1c.** Using developmental knowledge to create healthy, respectful, supportive, and challenging learning environments for young children.

### **Standard 3: Observing, Documenting and Assessing to Support Young Children and Families**

**3a.** Understanding the goals, benefits, and uses of assessment – including its use in development of appropriate goals, curriculum, and teaching strategies for young children

**3b.** Knowing about and using observation, documentation, and other appropriate assessment tools and approaches, including the use of technology in documentation, assessment and data collection.

**3c.** Understanding and practicing responsible assessment to promote positive outcomes for each child, including the use of assistive technology for children with disabilities.

### **Standard 4: Using Developmentally Effective Approaches**

**4a.** Understanding positive relationships and supportive interactions as the foundation of their work with young children

**4b.** Knowing and understanding effective strategies and tools for early education, including appropriate uses of technology

**4c.** Using a broad repertoire of developmentally appropriate teaching /learning approaches

**4d.** Reflecting on own practice to promote positive outcomes for each child

### **Standard 5: Standard 5: Using Content Knowledge to Build Meaningful Curriculum**

**5a.** Understanding content knowledge and resources in academic disciplines: language and literacy; the arts – music, creative movement, dance, drama, visual arts; mathematics; science, physical activity, physical education, health and safety; and social studies.

**5b.** Knowing and using the central concepts, inquiry tools, and structures of content areas or academic disciplines

**5c.** Using own knowledge, appropriate early learning standards, and other resources to design, implement, and evaluate developmentally meaningful and challenging curriculum for each child.

## Course Policies

**Communication:** Please feel free to text me, call me, or e-mail me about any questions, confusions, difficulties, or thoughts you may have. If you get a voice mail, let me know when it's OK to call you back.

**Professionalism:** As this is a graduate class designed to help prepare you to become a professional educator, your professionalism is expected. This includes arriving to class on time and being prepared to engage with your colleagues. While everyone has multiple responsibilities, both personal and professional, it is important to be respectful of your peers' – and your own – learning while in class. With that in mind, please refrain from any and all cell phone use unless required by an activity or assignment.

### **Academic integrity.**

Students at Bank Street are expected to adhere to high standards of academic integrity. Students should be aware of the definition of plagiarism (see below); all violations will be taken seriously, and may result in consequences as serious as expulsion.

Plagiarism is the use of another person's ideas, words, or theories as one's own – with or without citation – in an academic submission.

What does this mean?

- All work submitted must be original.
- Any reference to another person's work (including ideas, theories, or concepts) must be cited explicitly. See APA Citation Guidelines.
- Work presented as actual experience cannot be invented or fabricated.

**Religious Observance.** The College respects individuals' religious observances. If you are unable to make any class session, including a Friday session, because of religious observance, please notify the course instructor by the first class session so that an alternative means can be identified for fulfilling missed class material and course assignments.

### **Students with Disabilities.**

Bank Street College has both a legal obligation and philosophical commitment to making reasonable accommodations in order to meet the needs of students with disabilities. Any student requesting specific accommodations should contact Peggy McNamara, at (212) 875-4586. E-Mail address: mam@bankstreet.edu. If you are already registered with The Disabilities Services Office, please let me know your particular needs and how I can help you successfully complete this course.



**CONSENT TO PHOTOGRAPH, FILM, OR VIDEOTAPE A STUDENT FOR NON-PROFIT USE**  
(e.g. educational, public service, or health awareness purposes)

Student Name: \_\_\_\_\_ School: \_\_\_\_\_

I hereby consent to the participation in interviews, the use of quotes, and the taking of photographs, movies or video tapes of the Student named above by \_\_\_\_\_ Bank Street College of Education

I also grant to \_\_\_\_\_ Bank Street College of Education \_\_\_\_\_ the right to edit, use, and reuse said products for non-profit purposes including use in print, on the internet, and all other forms of media. I also hereby release \_\_\_\_\_ Bank Street College of Education \_\_\_\_\_ and its agents and employees from all claims, demands, and liabilities whatsoever in connection with the above.

Signature of Student (if 18 or over): \_\_\_\_\_ Date: \_\_\_\_\_

Address of Student: \_\_\_\_\_