Eastern Illinois University
Early Childhood, Elementary, and Middle Level Education Department
ELE3290.002: Science in the Elementary School

Instructor:	Denise E. Reid
Location & Time:	BB2430 T & R 8-9:40 a.m.
Office:	BB2211
Office Hours:	M & W 8:30-9:30 a.m.
	T & TH 3-4 p.m.
Telephone:	Office (217) 581-7891/Cell (217) 549-3633
E-mail address:	dereid@eiu.edu
Web Site:	http://www.ux1.eiu.edu/~dereid

Unit Theme: Educators as Creators of Effective Educational Environments: Integrating diverse students, subjects, strategies, societies and technologies.

Catalog Description: Science in the Elementary School.. Exploration of the nature, processes, and products of science and their relationships to society, the world, and the school curriculum. Field-based experiences will be in conjunction with ELE 4000.

Prerequisites: Concurrent enrollment in ELE 3340 and ELE 4880, or permission of department chair. University Teacher Education requirements apply and department requirements for enrollment must be met.

Purpose of the Course: To involve students in the process of learning about the nature of science; a sample of its content and the methods used to teach the content. Using theories of how children learn as a basis for instruction, the students develop their skills at teaching science processes through discovery, guided discovery, and inquiry lessons. Students will also understand the importance of assessment and evaluation, and will develop various means of assessment. ***Students will integrate technology in their lessons, projects, and science units.***

Course Text:
Martin, R., Sexton, S., Wagner, K., & Gerlovich, J. (2005). *Teaching science for all children* (4th ed.). Boston: Allyn & Bacon.

Carin, A. A., Bass, J. E., Contant, T. L. (2005). *Activities for teaching science as inquiry* (6th ed.). Upper Saddle River, NJ: Pearson, Merrill Prentice Hall.

Supplemental Materials
LiveText Account & Course packet.

Learning Model:

The Information-Processing Models

- Information-processing models emphasize ways of enhancing the human being's innate drive to make sense of the world by acquiring and organizing data, sensing problems and generating solutions to them, and developing concepts and language for conveying them.
- Scientific Inquiry & Inquiry Training: The Scientific Inquiry Model used The Biological Sciences Curriculum (BSCS) model as one example of a curriculum that uses inquiry teaching in developing science curriculum. "The essence of the model is to involve students in a genuine problem of inquiry by confronting them with an area of investigation, helping them identify a conceptual or methodological problem within that area of investigation, and inviting them to design ways of overcoming the problem." (p. 169) In addition, the Scientific Inquiry Model uses the work of Richard Suchman to support the Inquiry Training Model. Suchman believed that students can be conscious of their process of inquiry and can be taught the scientific procedures directly. "The model promotes strategies of inquiry and the values and attitudes that are essential to an inquiring mind, including: process skills; active, autonomous learning; verbal expressiveness; tolerance of ambiguity; persistence; logical thinking; and an attitude that all knowledge is tentative." (p. 185)

  There are different levels of inquiry, from guided to full inquiry. One teaching and learning model that supports inquiry and provides a framework to help teachers become more effective in using inquiry approaches is the Learning Cycle Model. The original Learning Cycle Model was developed by Professor Robert Karplus and colleagues at the University of California-Berkeley and consisted of three components: exploration, concept introduction, and concept application. The current model has been modified by BSCS and has five components: Engagement, Exploration, Explanation, Expansion, and Evaluation. (Moyer, R. H., Hackett, J. K., & Everett, S. A. (2007). *Teaching Science as investigations: Modeling inquiry through learning cycle lessons.* Upper Saddle River, NJ: Pearson/Merrill Prentice Hall.)

The BSCS 5E Instructional Model http://www.bscs.org/curriculumdevelopment/features/bscs5es.html

Joyce, B., Weil, M., & Calhoun, E. (2009). *Models of teaching*. (8th ed.). Boston: Pearson.

Dispositions: Teacher candidates in the Department of EC/ELE/MLE will exhibit professional ethical practices, effective communication, and sensitivity to diversity, the ability to provide varied teaching practices evidenced in a supportive and encouraging environment.

Live Text Assessment Requirement: For those classes with Live Text or Practicum- If the portfolio or Live Text requirements are rated, by the instructor, to have been completed in less than a satisfactory manner then no more than a "D" may be earned in the class regardless of the number of points earned.

Standards:
Course requirements and demonstrated competencies are aligned with the following standards:

- Association for Childhood Education International Standards (ACEI) http://www.acei.org/Synopsis.htm
- Illinois Standards for Certification in Special Teaching Fields-Elementary (ELE) http://www.isbe.net/profprep/CASCDvr/pdfs/26310_elementaryed.pdf
- Illinois Professional Teaching Standards (IPTS) http://www.isbe.state.il.us/profprep/PDFs/ipts.pdf
- Illinois Core Language Arts Standards (ICLAS) http://www.isbe.net/profprep/CASCDvr/pdfs/24110_corelangarts_std.pdf
- Illinois Core Technology Standards (ICTS) http://www.isbe.net/profprep/CASCDvr/pdfs/24100_coretechnology.pdf

Course Outcomes

1. The students will exhibit a positive attitude toward providing meaningful experiences in science for young students.
2. The students will demonstrate an understanding of the nature of science, the learner, and the learning environment.
3. The students will demonstrate a working knowledge of appropriate science learning and hands-on inquiry experiences for children.

4. The students will exhibit the ability to effectively utilize various types of materials, resources, and media to engage children in meaningful science experiments.
5. The students will demonstrate knowledge of assessment and evaluation procedures for science.
6. The students will demonstrate the ability to plan, implement, and assess science instruction for elementary students.
7. The students will become familiar with the Illinois Learning Standards for Science and the National Science Education Standards.

Course Requirements	**Demonstrated Competencies**	**Aligned Standards (ACEI, ELE, IPTS, ICTS, ICLAS)**
Participation	Performance includes presence, participation and preparation for group and whole class discussions, and participation in lab activities working cooperatively with peers. Focus is on practices and behaviors that allow the learner to grow professionally.	ACEI 5.1 ELE 16, 17 IPTS10, 11 ICTS 2E, 6C, 6D ICLAS 2D, 2E, 2H Dispositions: PEP, EC, SDE
Science notebook & lab sheets	Performance includes organizing science notebook in order to create a useful teaching resource. This resource will include handouts, assignments, lab sheets, demonstration lessons and a detailed Table of Contents. Focus is on developing a professional resource that can be used to plan and implement developmentally appropriate lessons using inquiry-based activities.	ACEI 2.2 ELE 4 IPTS 1, 7, 10 ICTS 2B ICLAS 2B Dispositions: PEP, EC, PTSL
Readings & written responses (Textbook & Journal Articles)	Performance will include reading, reflecting, and preparing for discussion of content related to science teaching and learning (constructivism, inquiry, assessment, questioning, learning cycle model, developmentally appropriate practices, etc.) Focus is on increasing the participant's knowledge and understanding of the learning theory and processes related to science teaching methods.	ACEI 2.2, 3.1, 3.3 ILSCSTF IPTS 1 ICTS 2E, 7K ICLAS 1E, 2B, 2D, 2F Dispositions: PEP, EC
Quizzes & Tests	Tests will be provided as one form of assessment of student's content knowledge related to planning and teaching effective science lessons. Focus is on demonstrating understanding of course content knowledge.	ACEI 2.2 ELE 4,16 IPTS 1, 8 ICLAS Dispositions: EC, PTSL
Science Unit*	Performance includes creating a two-week science unit that is developmentally appropriate and inquiry based. The lesson plans will follow the learning cycle model. Lessons will allow elementary students to develop conceptual understanding. Appropriate informal and	IPTS 1, 2, 3, 4, 6, 7, 8, ICTS 2E, 6A, 6C, 7J, 8A, 8D ACEI 1, 2.2, 3.1, 3.2, 3.3, 3.4, 4,