

Early Childhood, Elementary, and Middle Level Education Department
ELE3290: Science in the Elementary School

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Class Meetings: MW 8:00a – 9:40a, 10:00a – 11:40a, 1:00p- 2:40p

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

Catalog Description: Science in the Elementary School.. This course encompasses the 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.

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

Revised Spring, 2009

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 formal assessment activities will be included. Focus is on developing a developmentally appropriate inquiry-based science unit that fosters conceptual	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, NAEYC 4b, 4c, 4d Dispositions:

	understanding.	PEP, EC, PTSL, SDE
Demonstration Lesson & Group Presentation	Performance includes working cooperatively with peers to select demonstration lessons around a theme. Each demonstration lesson will foster inquiry. Performance will include demonstration understanding of the concept through effective questioning techniques for creating conceptual understanding and overall explanation of the concept.	ACEI 1, 2.2, 3.2, 3.3, ELE 4 IPTS 1, 3, 4, 6, 7 ICTS 7A, 7D, 7J, 8D ICLAS 1F, 2D, 2F Dispositions: PEP, EC, PTSL, IWS
*LiveText Submission	All or a portion of the Science Unit will be submitted through LiveText for Unit and Program Assessment.	

Core Assignments	Brief Description	Points/Due Date	Approximate Weight
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.		5% 50pts Throughout term
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.		10% 50 pts assignments TBA 50 pts Science Notebook 2 Dec.
Readings & written responses (Textbook & Journal Articles)	Select an article from a professional journal that corresponds with the relevant topic. Topics such as constructivism, inquiry-based learning, the learning cycle, using writing in science, authentic assessment, etc. Copy, read, highlight, and write reflective comments in the margins. Type a 1/2 to 1 page reflection that answers this question: What was the key idea presented in this article?		10% 100pts 31 Aug. Constructivism 2 Sept. Inquiry 14 Sept. Misconceptions 16 Sept. Authentic Assessment
Quizzes & tests	A midterm and a final will be given over the course content.		15% 50 pts. in class essays TBA 100 pts Final
Science Unit	An inquiry-based science unit will be developed. The unit will include: topic research, teacher resources, student resources, and lesson plans following the learning cycle model.		30% 300 pts. TBA
Demonstration lesson & group presentation	Performance includes working cooperatively with peers to select demonstration lessons around a theme. Each demonstration lesson will foster inquiry. Performance will		15% 100 pts Lesson Plan 50 pts Presentations