

EDUC 657: Inquiry Design and Methodology
August 2008 – April 2009
<http://www.sxi.sbc.edu>
Syllabus

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COURSE WEBSITE: <http://www.sxi.sbc.edu>

CATALOG DESCRIPTION:

In this follow-up course to EDUC 656 “Inquiry Methods in Math and Science”, teacher-participants will be continuing their study of the Inquiry Method as applied to the teaching and learning of Math and Science. Teacher-participants will continue to develop their skills as inquiry teachers, focusing on assessment strategies. An in-class action research project will be required. The course will also work on developing the teacher-participants’ capacity to carry out professional in-service programs on inquiry methods in math and science for their peers. *3 semester hours*

COURSE GOALS:

The course goals include:

- expanding the participants’ understanding of inquiry-based teaching, its historical roots, its research base, calls for national reform of science and math education; and applications of inquiry teaching in today’s standards-driven classrooms;
- providing the teacher participants with models of assessment practices for use in their inquiry-based teaching in science and math relevant to the national and Virginia standards;
- filling in “gaps” and correcting misconceptions in the teacher participants’ knowledge base in the content areas of science and math;
- aiding the teachers in implementing and assessing lessons in science and math that use an inquiry approach;
- developing the teacher-participants’ capacity to carry out professional in-service programs.

COURSE SCHEDULE and CLASS HOURS:

EDUC 657 is a long term course which begins on August 8, 2008, and is to be completed no later than the end of Spring Semester 2009. The course consists of 45 hours of integrated lecture/lab plus a minimum of 30 hours of fieldwork. The 45 hours of integrated lecture/lab will consist of :

- a two-day summer workshop held August 8 – 9, 2008 (8 instructional hours);
- a professional development conference (VAST) held November 13-15 (14 instructional hours);
- four pre-scheduled Saturday class meetings: Sept 27, Oct 25, Jan 17, and March 7 (13 instl hrs);
- and • a minimum of two Saturday math/science content workshops (10 instructional hours).

The math/science content workshops will be offered approximately once per month between September and May. All participants have the opportunity to attend these workshops but a minimum of two must be completed by the participant. Registration for these Saturday workshops is the responsibility of the teacher participant and should be completed at the earliest possible time to ensure seating availability.

Fieldwork consists of a research project accomplished by the teacher participants as they work toward completion of the course assignments.

ASSIGNMENTS AND EVALUATION:

Summary of Assignments and Course Grade Weightings

Extended descriptions are/will be available on the course website: www.sxi.sbc.edu

Reading Assignments are given from both texts: Carlson/Humphrey/Reinhardt and NRC.

Class Meetings 1&2 -required 10 % Friday and Saturday, August 8-9, 2008 (9:00-2:00)

During the summer workshop, teacher participants will be introduced to effective assessment strategies for inquiry-instruction. Through study and practice, the teacher participants will learn to apply their strategies to answering questions about student achievement.

Attendance at and participation in the class meetings are required. An agenda will be available one-week in advance on www.sxi.sbc.edu

Reading Assignment for Class Meetings 1&2, read before Class Meeting 2:

NRC pp 1-22 (Exec Sum, Chapters 1&2) and Carlson pp 1-33 (Chapters 1&2)

Science/Math Content Workshops 15 % Self-Scheduled (9:00-3:00)

Attendance at TWO Science/Math Content Workshops is REQUIRED of all Teacher-Participants in EDUC 657. Participation in these workshops is required and will count as 15% of the course grade.

A Fall Schedule will be available in August; a Spring Schedule will be available by mid-December.

Registration for these Saturday workshops is the responsibility of the teacher participant and should be done at the earliest possible time to ensure seating availability.

Assignment 1 5 % ***Due*** Friday, August 22, 2008

First draft of research plan. Teacher participants will be working on a year-long research project that addresses the question: "What is the impact of inquiry instruction in math/science on student achievement in the elementary/middle school classroom?" Additional information about expectations and write-up will be given in class.

Reading Assignment re: Assignments 1&2, read before Class Meeting 3:

NRC pp 23-77 (Chapters 3&4) and Carlson pp 35-57 (Ch 3)

Assignment 2 10 % ***Due*** Friday, September 12, 2008

Reading Assignment for Assignment 2: Second/final draft of research plan. Teacher participants will be working on a year-long research project that addresses the question: "What is the impact of inquiry instruction in math/science on student achievement in the elementary/middle school classroom?"

Additional information about expectations and write-up will be given in class.

Class Meeting 3 -required 5 % Saturday, Sept. 27, 2008 (12:00-2:00)

Attendance at and participation in the class meeting is required. This will be a further opportunity for teachers to reflect on, and discuss their research plan and to present initial baseline (pre-assessment) data about their target population. An agenda will be available one-week in advance on www.sxi.sbc.edu

Reading Assignment re: Assignment 3, read before Class Meeting 4:

NRC pp 79-96 (Chapter 5)

Class Meeting 4 -required 5 % Saturday, October 25, 2008 (9:00-3:00)
Attendance at and participation in the class meeting is required. Teachers will convene to practice and assess their in-service presentations (Assignment #3), and to continue discussions of their research plan and progress. An agenda will be available one-week in advance on www.sxi.sbc.edu

Assignment 3 10 % **Due** Friday or Saturday, November 14 or 15, 2008
Teacher participants will give an in-service presentation of inquiry instruction at the Virginia Association of Science Teachers (VAST) annual meeting in Williamsburg, VA.

Class Meeting 5 - required 5 % VAST Conference or Approved Substitution
Attendance at and participation in the class meeting is required. Teacher participants will be attending presentations, keynote address, plenary talks, poster-sessions, and workshops. An agenda will be available one-week in advance on www.sxi.sbc.edu

Reading Assignment re: Assignment 4, read before Class Meeting 6:
Carlson pp 59-87 (Chapters 4&5)

Assignment 4 5 % **Due** Monday December 15, 2009
Written INTERIM Report on research project. Teacher participants will be working on a year-long research project that addresses the question: "What is the impact of inquiry instruction in math/science on student achievement in the elementary/middle school classroom?" Additional information about expectations and write-up will be given in class.

Class Meeting 6 -required 5 % Saturday, January 17, 2009 (10:00-2:00)
Attendance at and participation in the class meeting is required. Teacher participants will be giving presentation on the status of their research projects. Design and methodology will be emphasized. An agenda will be available one-week in advance on www.sxi.sbc.edu

Reading Assignment re: Assignment 5, read before Class Meeting 7:
Carlson pp 99-109 (Chapter 6)

Assignment 5 15 % **Due** Friday February 27, 2009
Final Report on research project. Teacher participants will be working on a year-long research project that addresses the question: "What is the impact of inquiry instruction in math/science on student achievement in the elementary/middle school classroom?" Additional information about expectations and write-up will be given in class.

Class Meeting 7 -required 5 % Saturday, March 7, 2009 (9:00-12:00)
Attendance at and participation in the class meeting is required. Teacher participants will be giving an in-service presentation on the results of their research projects. An agenda will be available one-week in advance on www.sxi.sbc.edu

TEXTBOOKS:

Required (provided free of charge to teacher participants)

All Reading Assignments given in the syllabus are from these texts.

- National Research Council (2001). *Classroom Assessment and the National Science Education Standards*. Committee on Classroom Assessment and the National Science Standards, J. Myron Atkin, Paul Black, and Janet Coffey (Eds.). Center for Education, Division of Behavioral and Social Sciences and Education. Washington, DC: National Academy Press.
- Carlson, Maura O'Brien, Humphreys, Gregg E., and Rinehardt, Karen S. (2003). *Weaving Science Inquiry and Continuous Assessment: Using Formative Assessment to Improve Learning*. Thousand Oaks, CA: Corwin Press.

PAPERS:

In terms of mechanics, all written work is expected to be at a professional standard, double-spaced (1.5x spacing also acceptable), 12-point Times or Times New Roman font, with 1" margins, and referenced in a standardized format. Failure to do so will result in a one letter decrease in the assignment grade. Specific instructions for each assignment will be provided.

Academic Honesty:

Academic honesty is fundamental to the activities and principles of higher education. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. The Sweet Briar College honor statement declares that: *Sweet Briar students do not lie, cheat, steal, or violate the rights of others. Therefore, I pledge to uphold all standards of honorable conduct. I will report myself and others for any infraction of this pledge.*

Deadlines

Deadlines are an important part of the successful completion of any course and are necessarily inflexible in order to provide feedback to all students in a timely manner. All papers and projects have been assigned with ample time. Given that unexpected situations arise from time to time, the instructors are willing to work with you. Please discuss any changes needed in a timely manner with the course instructors. It is the participants' responsibility to be in touch with the professor about graded work and deadlines. Late work will be penalized unless advanced notice has been given. If an emergency arises that prevents the timely submission of your work, please contact both professors via email to let them know of the delay. Professional conduct in this respect is expected of all students in this course. Participants who do not hand in assignments may be dropped from the class roll and the participant's school administrator will be contacted about the change in status (from graduate credit to continuing education).

Grading Scale

90 - 100	A range (spans A- to A)	Excellent
80 - 89	B range (spans B- to B+)	Good
70 - 79	C range (spans C- to C+)	Average
60 - 69	D range (spans D- to D+)	Poor
less than 60	F	Failure

Enrollment and Completion of the Course

Enrollment in the course will be completed on the first day of the summer workshop, August 8, 2008.

No late additions will be accepted.

If for any reason, you need to drop the course during the academic year – you need to notify all three of the course instructors, as well as the Project Assistant (Jessica Griffith, jgriffith@sbc.edu) **and also** the Registrar (381-6179). Once you have dropped the course, your instructional time in the SCHEV program to date will be converted to continuing education units (points) and you will receive documentation to that effect.

SELECTED REFERENCES & RESOURCES:

- American Association for the Advancement of Science (1993). *Benchmarks for Science Literacy*, Project 2061. Washington, DC: Oxford University Press.
- Driver, R., Leach, J. (1996). *Young people's images of science*. Philadelphia: Open University Press.
- Duschl, R. (1989). *Restructuring science education: The importance of theories and their development*. Wolfeboro, N.H.: Teachers College Press.
- Lemke, J.L. (1990). *Talking science: Language, learning, and values*. Norwood, N.J.: Ablex Publishing Corporation.
- National Research Council. (1996). *National Science Education Standards*. Washington DC: National Academy Press. Available <http://books.nap.edu/html/nses/html/index.html> (ISBN 0-309-05326-9)
- Rutherford, F.J. (1990). *Science for all Americans*. New York: W.W. Norton.
- *Science Framework for Virginia*. The curriculum frameworks, content and performance standards, and grade level competencies can be accessed as Microsoft Word and pdf files (Science K-8/9-12) on the Virginia Department of Education's Website: "Standards of Learning Currently in Effect for Virginia Public Schools", <http://www.pen.k12.va.us/VDOE/Superintendent/Sols/home.shtml>