

ELMG 416—Elementary/Middle Grades Science
Montego Bay, Jamaica
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Instructor

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Conceptual Framework

The professional education program at Western Carolina University fulfills its mission by creating and nourishing a community of learners guided by knowledge, values, and experiences. The guiding principles of this community include: (1) the belief that the best educational decisions are made after adequate reflection and with careful consideration of the interests, experiences, and welfare of the persons affected by the decisions; (2) appreciation of and respect for diversity; (3) and the fostering of the responsible use of technology. This course builds upon the science learned from liberal studies and focuses on the teaching and learning of science in grades 6-

Required Texts

Buxton, C. and Provenzo, E. (2007). Teaching science in elementary and middle school. Sage Publications. ISBN 978-1-4129-2497-9

Cole, Henry (1998). I took a walk. Greenwillow Books. ISBN 978-0688-151157

Recommended Texts

Jorgenson, O., Cleveland, J., & Vanosdall, R. (2004). *Doing good science in middle school: A practical guide to inquiry-based instruction.* NSTA Press: Arlington, VA. ISBN: 978-0-87355-232-5

Luft, Julie (2008). *Science as Inquiry in the Secondary Setting.* NSTA Press. Arlington, VA ISBN: 978-1-93353-126-7

Science Scope: September 2008 Issue on Inquiry Based Teaching
Keeley, P. (2008) *Science Formative Assessment: 75 Practical Strategies for Linking Assessment, Instruction, and Learning.* NSTA Press: Arlington, VA. ISBN978-1-4129-4180-8

Keeley, P. *Uncovering Student Ideas in Science: 25 Formative Assessment Probes.* NSTA Press. Arlington, VA (3 volumes of this practical text are available)

Course Objectives/Competencies

1. Demonstrate an understanding of scientific inquiry and the ability to both use the process in personal inquiries and teach/facilitate the process in the classroom.

2. Demonstrate the ability to plan developmentally appropriate science units and lessons students in grades K-9.
3. Demonstrate effective teaching skills by implementing and reflecting upon inquiry-based science lessons.
4. Develop the ability to assess and evaluate the scientific understandings of early adolescents in ways that directly inform instruction.
5. Demonstrate competencies necessary to maintain an effective and worthwhile science program as described in the National Science Education Standards and the North Carolina Standard Course of Study.

Middle Level Standards that are applicable to ELMG 416/516
From NC DPI in collaboration with the National Middle School Association
(note course modules that apply to these standards are in bold)

Standard 5: Middle level teachers understand and use the central concepts, tools of inquiry, standards, and structures of *content* in their teaching field(s) and create meaningful learning experiences that develop young adolescents' competence in subject matter and skills.

Module 1, Module 2, Module 3, Module 4, Module 5

Standard 7: Middle level teachers understand and use the major concepts, principles, theories, and research related to effective instruction, and they *employ a variety of strategies* for a developmentally appropriate climate to meet the varying abilities and learning styles of all young adolescents.

Module 4, Module 5

Standard 8: Middle level teachers understand and use formal and informal assessment strategies to evaluate learning and teaching to ensure the continuous intellectual, social, and physical development of young adolescents.

Module 4, Module 5

Middle Level Science Content Standards applicable to ELMG 416/516
From NC CPI in collaboration with the National Science Teachers Association

Science Standard 1: Middle level science teachers should understand and use the main ideas in the *life, physical, and earth sciences*.

Module 4, Module 5

Science Standard 2: Middle level science teachers demonstrate their knowledge and ability to unify concepts and processes in the life, physical, and earth sciences.

Module 5

Science Standard 3: Middle level science teachers understand the nature of science and the development of scientific thought and use that knowledge in their teaching. **Module 5**

Science Standard 4: Middle level science teachers understand mathematical concepts and processes and use that knowledge in their science instruction. **Module 4, Module 5**

Science Standard 5: Middle level science teachers model safe and appropriate scientific investigations and procedures to develop problem solving and critical thinking skills. **Module 4, Module 5**

Science Standard 6: Middle level science teachers demonstrate their ability to design instruction that unifies science disciplines conceptually and procedurally to help young adolescents understand the natural world. **Module 1, Module 4, Module 5**

Course Requirements/Calendar/Evaluation

This online course is developed in modules. Each module is designed to be completed in approximately one or two weeks. Students **MUST** follow the guidelines for specific assignments within each module and the due dates for those assignments. Students are granted one grace day for each assignment (24 hours) with loss of 2 points for lateness. After the grace day, the assignment is no longer available and no points may be earned for that assignment.

Course Requirements	Point
Reading Assignments/In Class Activities	35
Mid Term Assessment	20
Teaching Demonstration	20
Reflection Paper on Teaching	10
Final Curriculum Project	15
TOTAL POINTS	100

Grading Scale

A + 100-98	B + 89-87	C + 79-77	D + 69-67	F below 60
A 97-94	B 86-84	C 76-74	D 66-64	
A - 93-90	B- 83-80	C- 73-70	D - 63-60	

Diversity Statement

This course will emphasize dealing effectively with the multicultural realities of school, be they cultural, racial, ethnic, gender-related, religious, or socioeconomic. Attention will be given to encouraging underrepresented groups to engage in the sciences. Accommodations for Students with Disabilities: Western Carolina University is committed to providing equal educational opportunities for students with documented disabilities. Students who require disability services or reasonable accommodations must identify themselves as having a disability and provide current diagnostic documentation to Disability Services. All information is confidential. Please contact Kimberly Marcus for more information. Phone: (828) 227-7234; E-mail: kmarcus@email.wcu.edu. The letter received from Student Support Services should be presented as documentation to the instructor as early in the semester as possible.

Course Calendar

Day One Text: Chapters 1-2

Day Two Text: Chapters 3-4
Day Three Text: Chapters 5-6
Day Four Text: Chapters 7-8
Day Five Text: Chapter 9
Day Six Mid Term Assessment
Day Seven: Teaching Demonstrations (K-3 teachers)
Day Eight: Teaching Demonstrations (4-6 teachers)
Day Nine: Teaching Demonstrations (7-11 teachers)
Day Ten: Reflection paper on Teaching/Begin Final Curriculum Project
Final Curriculum Project Due: June 4, 2009 (via email: Victoria@email.wcu.edu)