



**EDN 495/595: Explorations in Middle Grades Math and Science**  
University of North Carolina at Wilmington-Watson School of Education

**Course Syllabus Spring 2005**  
Strand 1: Math Group

NC Quest Program Instructors

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**Course Description:**

This course utilizes a blended learning model in exploring current scientifically-based methodologies for effective teaching and mentoring in middle grades math and science classroom environments. The course investigates successful strategies utilized at the state and regional level through content and pedagogy support offered through the Mathematics and Science Education Network. Course content is consistent both with the North Carolina Standard Course of Study and NC State Board and Professional Development Committee reports. The course serves two primary populations: middle grades math and science teachers

The format for class sessions will include intensive face-to-face workshops, class discussions (large and small groups), cooperative group-based learning tasks, and Web-based distance learning technologies.

**Resource Books:**

1. Liem, T.L. (1987). *Invitations to Science Inquiry* (2<sup>nd</sup> Ed.).
2. Colton, A.B, Goff, L.S., Langer, G.M (2003) *Collaborative Analysis of Student Work Improving Teaching and Learning*
3. NCTM (1990). *Journal of Research in Mathematics Education, Monograph Number. Constructivist Views On The Teaching And Learning of Mathematics*

### **Course Goals:**

#### **Major Goal: *Professional Development for Middle Grades Math and Science Teachers:***

1. Encourage, train and support those teaching math and science “out of area” in order to ensure that they meet the highly qualified teacher criteria and achieve licensure.
2. Focus on effective instructional strategies to meet the North Carolina Standard Course of Study in middle grades to help improve learning in each of the NC curriculum goals and national standards for mathematics and science.
3. Use technology applications to enhance the teaching of mathematics and science.
4. Create structures for dissemination of information on effective instructional practices for math and science education.

### **Course Topics:**

- Integrating State and National Math and Science Standards with Classroom Instruction
- Numeration
- Geometry and Measurement
- Algebra
- Probability and Data Analysis
- Biology, Environmental, Life Sciences
- Earth/Space Science
- Physical Sciences
- Chemistry
- Physics
- Science Notebooks
- Inquiry-Based Pedagogy
- Building Teacher Capacity Through Mentoring
- Self-Assessment of Teacher Capacities
- Investigative Technology Tools
- Web-Based Discussion and Collaboration
- Linking Student Learning, Teacher Performance, and Assessment
- Study Group Dynamics and Implementation
- Portfolio as an Assessment Tool
- Cultivating Reflective Practice
- Leadership Principles Facilitating Change
- Cycles of Assistance

### **Grading Policies:**

Attendance is expected at all scheduled meetings. Interactions with colleagues are a critical dimension of this course. Absences should be approved by the instructor prior to the date. Unexpected absences should be discussed with the instructional staff as soon as possible after the occurrence, in order to arrange for makeup of course learnings and assignments.

The material and the instructional design of this course requires that students be actively engaged in developing an understanding, adopting and adapting the information within their own contexts, and participating in focused discussions regarding application of supervisory practices. Please know that students have a responsibility and an authentic opportunity to take charge of their own learning. Attendance as well as participation in class discussions is a critical learning opportunity for you and others, and therefore is considered in the final grading.

### **Assignments**

Students will do a variety of assignments that will enhance their skills related to creating lesson plans, assessing students and themselves, implementing new instructional approaches, working collaboratively in study groups, and gathering and reporting activity results. The course will use student portfolios as a means of assessing classroom implementation and reflection of the material covered in the course.

***NOTE: Assignment dates are tentative and subject to change pending instructor/student group discussion***

### **Grading**

Grading will be based on the successful completion of the course requirements.

### **Academic Honor Code**

The University of North Carolina at Wilmington is committed to the proposition that the pursuit of truth requires the presence of honesty among all involved. It is therefore this institution's stated policy that no form of dishonesty among its faculty or students will be tolerated. Although all members of the university community are encouraged to report occurrences of dishonesty, honesty is principally the responsibility of the individual.

Academic dishonesty takes many forms, from blatant acts of cheating, stealing or similar misdeeds to the more subtle forms of plagiarism, all of which are totally out of place in an institution of higher learning. Reporting and adjudication procedures have been developed to enforce the policy of academic integrity, to ensure justice, and to protect individual rights. Complete details may be found in the current Student Handbook Code of Student Life and in the Faculty Handbook.

**Course Contact Hours**

This course requires 45 contact hours of instruction and is comprised of a combination of the following activities for math participants:

<b>Component</b>	<b>Activity</b>	<b>Estimated Contact Hours</b>
NC Quest Winter Institute	2 full day sessions	14 hours
Study Groups	Group-based study and activities coordinated through NC Quest Web Site.	10 – 20 hours
Outside Educational Programs	Participants will attend an approved educational program that is consistent with and build upon NC Quest instructional goals and activities	6-15 hours
School-based instructional sessions	NC Quest Instructional Staff will hold instructional sessions at participant schools.	10-15 hours
NC Quest Celebration Day	Spring 2005: Final face-to-face meeting to review program results through participant presentations	6 hours