MSET 561.001  
Seminar in the Teaching of Mathematics  
Fall 2006  

Dr. Richard Kitchen  
Hokona Hall-Zuni room 252, 277-7753, kitchen@unm.edu  
Web Page: www.unm.edu/~kitchen/
Office hours: Mondays, 1:30-4:00 and by appointment  
Class Time and Location: Tuesdays; 4:00 – 6:30 PM, TEC 201.

Required Texts: Course Reader (Can be purchased for $19.75 at CoE Copy Center).

Course Description: In this three-hour graduate course, students will first be introduced to some of the classic research literature in mathematics education. This literature is intended to provide a foundation for research that will be explored on assessment in mathematics education. The research base on assessment will subsequently be examined in the second part of the course.

Course Goals:
1. Students will explore the cognition-based research literature in mathematics education research.
2. Students will examine how the research base in mathematics education can form the foundation for their research studies.
3. Students will investigate the research literature in assessment in mathematics education.

Participation: There is no substitution for active participation. If you cannot attend class, call Dr. Kitchen at (505) 277-7753. Late work will result in a 10% grade deduction.

Attendance and Tardy Policies: Students who miss more than one class meeting will earn a W in the course. Students with more than two tardies (more than 10 minutes late) will have their grade lowered one full letter grade (e.g., from a B to a C).

Special Needs: The American with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodations of their disabilities. If you have a disability requiring accommodation, please contact me with appropriate documentation from Accessibility Services (505) 277-3506, Mesa Vista Hall, Room 2021.

Plagiarism and Academic Dishonesty: Plagiarism will not be tolerated. Any student who engages in plagiarism will earn an F in the course. It is also the responsibility of students to avoid practices that may be considered acts of academic dishonesty. UNM’s policy on academic dishonesty can be found in the UNM Catalog on page 43. In terms of written work, you have the responsibility to make it very clear what portion of the work you wrote and what was written by other people, such as book or article authors, web site authors, or your colleagues. This includes both direct quotes and paraphrases. If you submit an assignment with inadequate citation, points may be deducted from your assignment at your instructor’s discretion. Further information on avoiding plagiarism and other forms of academic dishonesty can be found in the APA Manual and at the Dartmouth College Website: http://www.dartmouth.edu/~sources/contents.html.

Incompletes and Withdrawals: Incompletes and withdrawals from the course will be allowed only in accordance with UNM policies. Please see the UNM catalog for a description of these policies.
**Course Expectations:**

1. **Participation in discussions of readings:** All students will be expected to be prepared for class by completing the assigned readings and developing a response paper. In your response paper, you can reference ideas presented in a previous class. When possible, give references to justify and help substantiate your reaction(s). Be prepared to submit a type-written, hard copy of your response paper each week; do not send as an email attachment. **Guidelines for response paper:**
   - Respond to questions that will be provided by the instructor via email prior to class; and
   - Identify and react to at least two of the main points made in the assigned reading for that week **OR** Give your personal reaction(s) to the reading.

   In addition, each week there will be a discussion on a short article provided by the discussion leader the previous week (make 13 copies). (40% of final grade)

2. **There will be one paper in this course, due on December 5.** Your work on the response papers could help inform parts of your paper and/or assist you in identifying areas of the research base to review. Potential ideas for the paper and specific guidelines will be presented in class. Students may not revise and resubmit the paper. However, time will be provided in the weeks leading up to December 5 for students to share initial drafts of their paper with one another and the instructor for review. (40% of final grade)

3. **Final presentation (20% of final grade):** You will make a presentation of your Final Paper to the class on November 14, November 21, or November 28. The oral presentation is worth 20% of your final grade.

**Grading of papers and presentation:**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Minimum Score</th>
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<tbody>
<tr>
<td>A+</td>
<td>Better than 100</td>
</tr>
<tr>
<td>A</td>
<td>93-100</td>
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<tr>
<td>A-</td>
<td>90-92</td>
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<tr>
<td>B+</td>
<td>88-89</td>
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<tr>
<td>B</td>
<td>83-87</td>
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<tr>
<td>B-</td>
<td>80-82</td>
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<tr>
<td>C+</td>
<td>78-79</td>
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<tr>
<td>C</td>
<td>73-77</td>
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<tr>
<td>C-</td>
<td>70-72</td>
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<tr>
<td>F</td>
<td>69 &amp; below</td>
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**Mission Statement: College of Education**

**The vision of the college of Education: Excellence and diversity through people, ideas, and innovation.**

Our mission is the study & practice of education through teaching, research & service. We address critical education issues; test new ideas and approaches to teaching and learning; and educate professionals who can facilitate human growth and development in schools, homes, communities and workplaces; prepare students for participation in complex challenging society.

In carrying out our mission, we value excellence in all that we do; relationships of service, accountability, collaboration, and advocacy; the discovery, discussion, and dissemination of ideas; and innovation in teaching, technology, and leadership.
<table>
<thead>
<tr>
<th>Date</th>
<th>Class Activities/Readings</th>
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<tbody>
<tr>
<td>Aug. 22</td>
<td>Welcome and student introductions. Review syllabus and course expectations. Give hand-out on NCLB and ask everyone to read it and take break. Short class discussion on article focused on following questions: 1. How is NCLB influencing mathematics education and classroom assessment? 2. How can research in mathematics education inform us as researchers about NCLB and policy in general? HW: Read <em>Learning and Teaching with Understanding</em> by James Hiebert &amp; Thomas Carpenter. Bring response paper to next class.</td>
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<td>Aug. 29</td>
<td>Discuss readings and critical questions. HW: Read <em>Teachers' Beliefs and Conceptions: A Synthesis of the Research</em> by Alba Thompson.</td>
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<td>Sept. 5</td>
<td>Discuss readings and critical questions. Introduce Final Paper assignment and presentations of Final Paper. HW: <em>Teachers' Knowledge and Its Impact</em> by Elizabeth Fennema and Megan Franke.</td>
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<td>Sept. 12</td>
<td>Meet in Zimmerman Library, room 254 for session led by Michele Mals on research search engines. Discuss readings and critical questions. HW: Read <em>Radical Constructivism and Mathematics Education</em> by Leslie Steffe and Thomas Kieren and <em>Constructivist, Emergent, and Sociocultural Perspectives in the Context of Developmental Research</em> by Paul Cobb &amp; Erna Yackel.</td>
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<td>Sept. 19</td>
<td>Discuss readings and critical questions. HW: Read <em>Assessment of Students’ Knowledge of Mathematics: Steps Toward a Theory</em> by Norman Webb.</td>
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<td>Sept. 26</td>
<td>Discuss readings and critical questions. Time is provided for students to share potential topics they’re interested in investigating for Final Paper. HW: Mid-term Paper and Read <em>The Role of Classroom Assessment in Teaching and Learning</em> by Lorrie Shepard.</td>
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<td>Oct. 3</td>
<td>Discuss readings and critical questions. HW: Read <em>Assessing Mathematics Competence and Achievement</em> by Thomas Romberg and <em>Toward the Development of a New Science of Educational Testing and Assessment</em> by Harold Berlak.</td>
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<td>Oct. 10</td>
<td>Discuss readings and critical questions. HW: Read <em>Assessing Student Growth in Mathematical Problem Solving</em> by Frank Lester &amp; Diana Lambdin Kroll and <em>A New World View of Assessment in Mathematics</em> by Thomas Romberg, E. Anne Zarinina, &amp; Kevin Collis.</td>
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<td>Oct. 17</td>
<td>Discuss readings and critical questions. HW: Read <em>Alignment of Content and Effectiveness of Mathematics Assessment Items</em> by Gerald Kulm, Linda Wilson, &amp; Richard Kitchen and <em>Aligning Curriculum, Standards, and Assessments: Fulfilling the Promise of School Reform</em> by Eva Baker.</td>
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Oct. 24  Discuss readings and critical questions. HW: Read *Monitoring Student Progress* by Jan de Lange & Thomas Romberg and *Instructional Innovation and Changing Assessments* by M. Elizabeth Graue & Stephanie Smith.

Oct. 31  Discuss readings and critical questions. HW: Read *Making Instructional Decisions: Assessment to Inform the Teacher* by Martin van Reeuwijk and *Classroom Assessment as a Basis for Teacher Change* by David Webb, et al.

Nov. 7   Discuss readings and critical questions. HW: Prepare for oral presentations.


Nov. 21  **Oral presentations of Final Paper continues.** HW: Finish initial draft of Final Paper and bring two copies of this draft to the next class.

Nov. 28  **Oral presentations of Final Paper completed.** Bring the two copies of draft of Final Paper to class for others to critique. HW: Final Paper.

Dec. 5   **Submit Final Paper.** Course wrap-up. Complete course evaluation.
I. Structure of academic papers
   A. Introduction: In first paragraph, be sure to provide question, questions or theme that you will be addressing. In proceeding paragraphs, provide context, personal narratives, a few citations and/or examples to clarify the question(s) or theme for the reader. This introduction serves to set the stage for the main body of the paper. For example, you are writing a paper in which you are exploring how your colleagues use alternative assessment to improve student learning. In the opening paragraph, you should state your purpose. In the remainder of the introduction, you would help the reader understand what is alternative assessment, provide a few citations that help the reader understand alternative assessment, and possibly describe why you are interested in studying your colleagues’ use of alternative assessment (context).

   B. Main Body of Paper: In this section of the paper, you summarize research literature that is relevant to your question(s) or theme, while framing your discussion to reflect your philosophical perspective. **When possible, use examples to clarify points that you are making. Do not make assumptions that the reader has the same level of expertise in the area that you are describing that you have.** In this section of your paper on alternative assessment, you could argue for the importance of alternative assessment formats to align with constructivist teaching practices. You would use appropriate professional references to add validity to your argument and to situate your work in the context of the work of others. You might also give more detailed information about alternative assessment formats than what you provided in the introduction with some examples. In this section, you could also summarize your research methodology or you could create a methodological section. It is in this part of the paper that you tell the reader exactly how you carried out your study (e.g., you gave the teachers a survey to complete in which they gave information about how they incorporate alternative assessment formats in their classes.)

   C. Results: If you carried out a study, you summarize your findings in this section.

   D. Implications for practice: In this section, you explicitly discuss how your review of the research literature and/or research study will impact your instruction. Simply reviewing literature about alternative assessment formats may have informed you about new assessment strategies that you had not previously considered. This review may enlighten you to implement some new assessment formats and you should.

II. Sample references in the body of the paper: “For the reform vision to become a reality, teachers will need on-going access to multiple professional development experiences that model the ways in which teachers are being asked to teach (NCTM, 1991; Ball & Cohen, 1999; Smith, 2001).” Always go to the original source.
**Curriculum & Instruction Web Tour**

PBS Teacher Source:  
http://www.pbs.org/teachersource/

Association for Supervision and Curriculum Development Reading Room:  
http://www.ascd.org/readingroom.html

American Educational Research Association Publications:  
http://aera.net/pubs/

Education Review:  
http://coe.asu.edu/edrev/

Phi Delta Kappan:  
http://www.pdkintl.org/kappan/kappan.htm

Wisconsin Center for Education Research:  
http://www.wcer.wisc.edu/publications/pub_online.htm  
http://www.wcer.wisc.edu/

Harvard Educational Review:  
http://www.gse.harvard.edu/~hepg/her.html

Research Institute on Secondary Education for Youth with Disabilities:  
http://www.wcer.wisc.edu/riser/

Vocational Education Resources:  
http://vocserve.berkeley.edu/fulltext.html

Center of Popular Education and Participatory Research:  
http://www-gse.berkeley.edu/research/pepr/

Cress Teacher Research Program, Bibliography of Books:  
http://education.ucdavis.edu/cress/projects/satellites/teachresearch/bibliography.html

University of California, Davis Research:  
http://www.ucdavis.edu/cgi-bin/search.pl/

**Mathematics Education Web Tour**

Center for Bilingual Education and Research (CBER)  
http://www.asu.edu/educ/cber

Center for Research on Education, Diversity & Excellence  
http://www.crede.ucsc.edu/
Eisenhower National Clearinghouse:
http://www.enc.org/

EQUALS, Lawrence Hall of Science, University of California, Berkeley
http://equals.lhs.berkeley.edu/

ESL Magazine
http://www.eslmag.com

Fundacion Cientec
http://www.cientec.or.cr.matematica.html

History of Mathematics:
www-groups.dcs.st-and.ac.uk/~history/

The K-12 Mathematics Curriculum Center
http://www2.edc.org/mcc/

Dr. Gerald Kulm’s web site, College of Education at Texas A&M University:
www.coe.tamu.edu/~gkulm/

Lawrence Hall of Science, University of California-Berkeley:
http://www.lhs.berkeley.edu/Publications/

Math Forum
http://mathforum.org/dr.math/

MATHCOUNTS Home Page:
http://206.152.229.6/

Mathematical Association of America
http://www.maa.org/

Mathematics Lessons:
http://sln.fi.edu/rfi/hotlists/math.html

Mathematics Projects

National Academy of Sciences
http://www.nas.edu/

National Center for Improving Student Learning and Achievement in Mathematics and Science:
http://www.wcer.wisc.edu/ncisla/

The National Coalition for Equity in Education, University of California, Santa Barbara
http://ncee.education.ucsb.edu/
National Council of Teachers of Mathematics:
http://www.nctm.org/

National Science Foundation
http://www.nsf.gov/

PBS Teacher Source in Mathematics:
http://www.pbs.org/teachersource/mathline/overview.shtm

Problem Solving Activities from Canada
http://www.stfx.ca/special/mathproblems/welcome.html

Project 2061 of the American Association for the Advancement of Science
http://www.project2061.org/index.html

ShowMe Center Home
http://www.showmecenter.missouri.edu/showme/Curricula.htm

Society for Advancement of Chicanos and Native Americans in Science
http://www.SACNAS.org/

Swarthmore College Mathematics Forum:
http://www.forum.swarthmore.edu/

Teaching Enhanced Anchored Mathematics… Uncovering Mathematics Skills of Middle School Students with Disabilities:
http://www.wcer.wisc.edu/TEAM/

Third International Mathematics and Science Study (TIMSS)
http://timss.bc.edu/

TIMSS Video Study, Improving Mathematics Teaching

Dr. James Wilson’s web site, College of Education at the University of Georgia:
http://jwilson.coe.uga.edu/

U.S. Department of Education
http://www.ed.gov/index.jhtml