

RHODE ISLAND COLLEGE

FEINSTEIN SCHOOL OF EDUCATION AND HUMAN DEVELOPMENT

SED 411-412 (NUMBERED SED 410 THROUGH SPRING 2010)

SED 411 CONTENT AND PEDAGOGY IN SECONDARY EDUCATION – MATHEMATICS
SED 412 FIELD PRACTICUM IN SECONDARY EDUCATION – MATHEMATICS
(SED 410 PRACTICUM IN SECONDARY EDUCATION – MATHEMATICS)

Instructors: Donna Christy, Ed. D.; Vivian LaFerla, Ed. D.; Mary M. Sullivan, Ed. D.

Department: Department of Educational Studies, Ellen Bigler, Ph. D., Chairperson

1. COURSE INFORMATION

SED 411: Teacher candidates examine principles, methods, content and curriculum in the content area, and prepare lessons and units that incorporate needs of diverse learners and effective assessment strategies. Prerequisite: SED 407 with minimum grade of B-, and fulfillment of retention standards. (4 credits)

SED 412: Teacher candidates, under supervision of college and clinical instructors plan, develop, and implement lesson plans within middle/secondary clinical settings, drawing on content of concurrently-taken course SED 411. Prerequisite: SED 407 with minimum grade of B-, and fulfillment of retention standards. Concurrent enrollment in SED 411. (2 credits)

SED 410: Students study principles, methods, and curriculum in mathematics, including global perspectives and health issues. Students prepare and deliver lessons and work with individual students, small groups, and classes in secondary schools. At least one multicultural site is used. (5 credits)

<i>Learning Objectives (SED 411 and SED 410, except field component)</i>	<i>RIPT Standards; RIC FSEHD Conceptual Framework</i>	<i>How assessed</i>
Plan lessons and units appropriate for secondary mathematics instruction in a variety of student populations and school environments.	RIPTS 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3 FSEHD: Knowledge, Pedagogy, Diversity	Implemented lesson plan (mini-TCWS) Unit Plan (mini-TCWS)
Develop a variety of lesson modes that acknowledge different ability levels, cultural and language backgrounds, and interest levels as well as different learning needs and learning styles: formal presentation, investigative lesson, activity or lab lesson, and/or problem solving lesson.	RIPTS 2.4, 3.1, 3.2, 3.3, 4.1, 4.2 FSEHD: Pedagogy, Diversity	Implemented lesson plan (mini-TCWS) Unit Plan (mini-TCWS)

Develop effective strategies to motivate all students to become involved in learning mathematics.	RIPTS 2.5, 4.2, 5.3, 5.5 FSEHD: Knowledge, Diversity	
Develop effective classroom discourse techniques including questioning strategies.	RIPTS 5.2, 8.1, 8.2, 8.3, 8.4 FSEHD: Pedagogy	Implemented lesson plan (mini-TCWS)
Gain experience with several classroom organizational schemes: large group; small group; pairs; and individual.	RIPTS 3.2, 6.5, 6.6 FSEHD: Pedagogy	Implemented lesson plan (mini-TCWS)
Design assessment measures such as quizzes, tests, performance tasks; and incorporate other forms of assessment as appropriate.	RIPTS 9.1, 9.3, 9.4 FSEHD: Knowledge, Pedagogy	Implemented lesson plan (mini-TCWS) Unit Plan (mini-TCWS)
Create appropriate homework assignments.	RIPTS 2.4, 5.2, 9.1 FSEHD: Knowledge, Pedagogy	Implemented lesson plan (mini-TCWS) Unit Plan (mini-TCWS)
Use manipulatives to facilitate teaching and learning.	RIPTS 2.3, 5.5, 8.2 FSEHD: Pedagogy	Implemented lesson plan (mini-TCWS)
Integrate technology effectively to enhance teaching and learning, including graphing calculator, selected computer programs, the Internet.	RIPTS 2.3, 8.3 FSEHD: Knowledge, Pedagogy	Implemented lesson plan (mini-TCWS) Unit Plan (mini-TCWS)
Use the overhead projector/document camera and create effective teaching transparencies/documents.	RIPTS 2.3, 2.4, 3.3 FSEHD: Pedagogy	Implemented lesson plan (mini-TCWS)
Observe and learn from lessons taught by others.	RIPTS 7.1, 10.1 FSEHD: Professionalism	Implemented lesson plan (mini-TCWS)
Develop appropriate classroom management strategies.	RIPTS 6.4, 11.4 FSEHD: Professionalism	Implemented lesson plan (mini-TCWS)
Practice effective written and oral communication skills.	RIPTS 8.1, 8.2, 8.3, 8.4 FSEHD: Knowledge, Pedagogy	Implemented lesson plan (mini-TCWS) Unit Plan (mini-TCWS)
Connect mathematics background to secondary classroom.	RIPTS: 2.1, 2.5, 10.2 FSEHD: Knowledge, Professionalism	Mathematical Investigations; Journal reflections; Performance task

2. COURSE TEXTS AND MATERIALS

- 1) Armstrong, T. (1994). *Multiple Intelligences in the Classroom*. Alexandria, VA: Association for Supervision and Curriculum Development.
- 2) Boswell, Laurie et al. (2000). *A Mathematics Handbook Geometry To Go*. GreatSource Education Group.
- 3) Dahlke, Richard M. (2008). *How to Succeed in College Mathematics*. BergWay Publishing.
- 4) Driscoll, M. (1999). *Fostering Algebraic Thinking*. Portsmouth, NH: Heinemann.
- 5) Driscoll, M., with DiMatteo, R.W., Nikula, J., & Egan, M. (2007). *Fostering Geometric Thinking*. Portsmouth, NH: Heinemann.
- 6) Fair, Robert et al. (2000). *A Mathematics Handbook Algebra To Go*. Great Source Education Group.
- 7) Huetinck, L., & Munshin, S. (3E; 2008). *Teaching Mathematics for the 21st Century: Methods and Activities for Grades 6-12*. Upper Saddle River, NJ: Pearson/Prentice Hall. *
- 8) Ma, L. (1999). *Knowing and Teaching Elementary Mathematics: Teachers' Understanding of Fundamental Mathematics in China and the United States*. Mahwah, NJ: Lawrence Erlbaum.
- 9) National Council of Teachers of Mathematics. (2000). *Principles and Standards for School Mathematics*. Reston, VA: NCTM.
- 10) National Council of Teachers of Mathematics. (2006). *Curriculum Focal Points for Prekindergarten through Grade 8*. Reston, VA: NCTM.
- 11) National Council of Teachers of Mathematics. (2000+). *Navigations Series 6-8 and 9-12*. Reston, VA: NCTM.
- 12) National Mathematics Advisory Panel. (2008). *Foundations for Success: The Final Report of the National Mathematics Advisory Panel*. Washington, DC: U.S. Department of Education.
- 13) National Research Council. (2001). *Knowing and Learning Mathematics for Teaching*. Washington, DC: National Academy Press.
- 14) Pappus, Theoni. *The Mathematics Calendar 2010*.
- 15) Posamentier, A.S., & Hauptman, H. A. (2001). *101 Great Ideas for Introducing Key Concepts in Mathematics: A Resource for Secondary School Teachers*. Thousand Oaks, CA: Sage.
- 16) Posamentier, A.S., & Stepelman, J. (2006). *Teaching Secondary Mathematics: Techniques and Enrichment Units, 7th ed.* Upper Saddle River, NJ: Pearson Education. *
- 17) Rhode Island Professional Teaching Standards.

* Primary course texts

Articles

Selected articles from NCTM's *Mathematics Teacher*, *Mathematics Teaching in the Middle School*, and various standards-based resources. Highlighted resources appear below.

- 1) Allsop, D. (2003). Why students with special needs have difficulty learning mathematics and what teachers can do to help. *Mathematics Teaching in the Middle School*, 8(6), 309-314.
- 2) Baroody, A.J. & Bartels, B.H. (2000). Using concept maps to link mathematical ideas. *Mathematics Teaching in the Middle School*, 9(9), 604-609.
- 3) Curcio, F.R. (1999). Dispelling myths about reform in school mathematics. *Mathematics Teaching in the Middle School* 4(5), 282-284.
- 4) Feigenbaum, R. (2000). Algebra for students with learning disabilities. *Mathematics Teacher*, 93(4), 270-274.
- 5) Goldsby, D.S. & Cozza, B. (2002). Writing samples to understand mathematical thinking. *Mathematics Teaching in the Middle School*, 7(6), 517-520.
- 6) Grandau, L. & Stephens, A.C. (2006). Algebraic thinking and geometry. *Mathematics Teaching in the Middle School* 11(7), 344-349.

- 7) Harper, S.R. (2004). Students' interpretations of misleading graphs. *Mathematics Teaching in the Middle School*, 9(6), 340-343.
- 8) Hylton-Lindsay, A.A. (2003). Problem solving, patterns, probability, Pascal, and palindromes. *Mathematics Teaching in the Middle School*, 8(6), 288-293.
- 9) Kitchen, R. et al. (2002). Support reform through performance assessment. *Mathematics Teaching in the Middle School*, 8(1), 24-30.
- 10) Kohler, A.D. (2002). The dangers of mathematical modeling. *Mathematics Teacher*, 95(2), 140-145.
- 11) Kukla, D. (2007). Graphing families of curves. *Mathematics Teacher*, 100(7), 503-509.
- 12) Leitze, A.R. & Kitt, N.A. (2000). Using homemade algebra tiles to develop algebra and prealgebra concepts. *Mathematics Teacher*, 93(6), 462-486, 530.
- 13) Lipp, A. (2000). Cubic polynomials. *Mathematics Teacher*, 93(9), 788-792.
- 14) Long, V.M. et al. (2000). Anatomy of an assessment. *Mathematics Teacher*, 93(4), 346-348.
- 15) *Mathematics Teaching in the Middle School*, (2000), 5(8), 478-546: special issue on communication.
- 16) McDuffie, A.R. (2000). Flying through graphs: An introduction to graph theory. *Mathematics Teacher*, 94(8), 680-688.
- 17) Miller, C.B. & Veenstra, T. B. (2002). Fibonacci: Beautiful patterns, beautiful mathematics. *Mathematics Teaching in the Middle School*, 7(5), 298-305.
- 18) Nissen, P. (2000). A geometry solution from multiple perspectives. *Mathematics Teacher*, 92(4), 324-327.
- 19) Perkins, I. (2002). Mathematical notations and procedures of recent immigrant students. *Mathematics Teaching in the Middle School*, 7(6), 346-351.
- 20) Reeves, C.A. & Webb, D. (2004). Balloons on the rise: A problem-solving introduction to integers. *Mathematics Teaching in the Middle School*, 9(9), 476-482.
- 21) Rider, Robin. (2007). Shifting from traditional to nontraditional teaching practices using multiple representations. *Mathematics Teacher*, 100(7), 494-500.
- 22) Romagnano, L. (2001). The myth of objectivity in mathematics assessment. *Mathematics Teacher*, 94(1), 31-37.
- 23) Rubenstein, R.N. (2002). Building explicit and recursive forms of patterns with the function game. *Mathematics Teaching in the Middle School*, 7(8), 426-431.
- 24) Schultz, J.E., & Waters, M.S. (2000). Why representations? *Mathematics Teacher*, 93(6), 448-453.
- 25) Star, J.R. , et al. (2000). Algebraic concepts: What's really new in new curricula? *Mathematics Teaching in the Middle School*, 5(7), 446-451.
- 26) Thompson, A.D. & Sproule S.L. (2000). Deciding when to use calculators. *Mathematics Teaching in the Middle School*, 6(2), 126-129.
- 27) Thompson, D.R. & Rubenstein, R.N. (2000). Learning mathematics vocabulary: Potential pitfalls and instructional strategies. *Mathematics Teacher*, 92(7), 568-573.
- 28) Vennebush, G.P. et al. (2005). Embedding algebraic thinking throughout the mathematics curriculum. *Mathematics Teaching in the Middle School*, 11(2), 86-93.
- 29) Winicki-Landman, G. (2001). Searching families as a source of surprise. *Mathematics Teacher*, 94(6), 468-478.

National P-16 Web Resources

Alliance for Excellent Education <http://www.all4ed.org/>

American Youth Policy Forum <http://www.aypf.org/>

Achieve, Inc. <http://www.achieve.org/>

ACT, Inc. <http://www.act.org/>

The Bridge Project (Stanford) <http://www.stanford.edu/group/bridgeproject/#about>

Business Higher Education Forum (ACE and National Alliance of Business) <http://www.bhef.com/>
 Center for Occupational Research and Development (CORD) <http://www.cord.org/>
 The College Board <http://www.collegeboard.com/>
 Council of Chief State School Officers (CCSSO) <http://www.ccsso.org/>
 Data Quality Campaign <http://www.dataqualitycampaign.org/>
 Education Commission of the States (ECS) <http://www.ecs.org/>
 Education Trust <http://www2.edtrust.org/edtrust>
 Institute for Higher Education Policy (IHEP) <http://www.ihep.com/>
 Jobs for the Future <http://www.jff.org/>
 Midwestern Higher Education Compact (MHEC) <http://www.mhec.org/>
 National Association of System Heads (NASH) <http://www.nashonline.org/>
 National Center for Education Statistics (NCES) <http://nces.ed.gov/>
 National College Access Network (NCAN) <http://www.collegeaccess.org/NCAN/>
 National Council for Community and Education Partnerships (NCCEP) <http://www.edpartnerships.org/>
 National Center for Higher Education Management Systems (NCHEMS) <http://www.nchems.org/>
 National Center for Public Policy and Higher Education (NCPPE) <http://www.highereducation.org/>
 National Conference of State Legislatures (NCSL) <http://www.ncsl.org/>
 National Governors' Association (NGA) <http://www.nga.org/portal/site/nga>
 New England Board of Higher Education (NEBHE) <http://www.nebhe.org/>
 National Survey of Student Engagement (NSSE) <http://nsse.iub.edu/index.cfm>
 Pathways to College Network <http://www.pathwaystocollege.net/>
 State Higher Education Executive Officers (SHEEO) <http://www.sheeo.org/>
 Southern Regional Education Board (SREB) <http://www.sreb.org/>
 Standards for Success (University of Oregon) <http://www.s4s.org/>
 State Scholars Initiative (SSI) <http://www.wiche.edu/statescholars/>
 Transitions to College (Lumina) <http://edtransitions.ssrc.org/home.aspx>
 U.S. Department of Education <http://www.ed.gov/index.jhtml>
 Western Interstate Commission on Higher Education (WICHE) <http://www.wiche.edu>

3. COURSE CALENDAR

The 14-week semester is split between campus sessions and off-campus field placements. The field placements are split between middle school and high school settings. At least one placement must be in an urban district. Typically, teacher candidates have 3-4 weeks in campus sessions prior to the first field placement; however NECAP testing schedules dictate actual dates for field placements.

The topical outline that appears below identifies the major topics during the seven weeks of on-campus sessions. While in the field, candidates are preparing lessons to be taught and use resources from the course, online resources, and curriculum materials in use at the off-campus sites.

<i>Week</i>	<i>Class Topic</i>	<i>Readings</i>	<i>Examples of Assignments</i>
1	Curricula Issues a. Past, present, and	NCTM Principles & Standards (selections) (9)	Mathematical Investigation Prepare lesson to teach on-

	<p>future curricula in secondary schools</p> <p>b. National and state content and teaching standards</p> <p>c. Content and teaching resources</p>	<p>Huetinck, L., & Munshin, S. (7)</p> <p>Posamentier, Alfred and Stepelman, Jay. (16)</p> <p>Articles from list</p> <p>RI GLEs and GSEs</p>	<p>campus to peers</p> <p>Redesign lesson plan developed in SED 406-407</p> <p>Reflection on article</p>
2	<p>Teaching Strategies</p> <p>a. Inquiry and critical thinking</p> <p>b. Literacy: Reading and Writing in Mathematics</p> <p>c. Integrating current issues</p> <p>d. Interdisciplinary approaches across the curriculum</p>	<p>NCTM <i>Curriculum Focal Points for PK-8 (10)</i></p> <p>NCTM <i>Navigations Series 6-8, 9-12 (11)</i></p> <p>Articles from list</p>	<p>Mathematical Investigation (induction proof)</p>
3	<p>Lesson and Unit Planning</p> <p>a. Objectives and Outcomes</p> <p>b. Sequencing Instruction: individualized, small and large groups</p>	<p>NCTM Principles & Standards (selections) (9)</p> <p>Huetinck, L., & Munshin, S. (7)</p> <p>Posamentier, Alfred and Stepelman, Jay. (16)</p> <p>Articles from list</p>	<p>Choosing teaching materials</p> <p>Bloom's Taxonomy & DOK chart</p> <p>Diversity of Learners</p> <p>Write reflections on lessons taught by peers; prepare written feedback to presenters; revise lesson taught</p> <p>Prepare for mid-term exam</p> <p>Performance task</p>
<p>Field Components: Prepare daily lessons; teach them; revise and prepare reflections</p> <p>Prepare constructive feedback to peers whose lessons were observed</p> <p>Compilation of field components is due upon return to campus</p>			
4	<p>Classroom Discourse</p> <p>a. Questioning</p> <p>b. Student discussion</p>	<p>Huetinck, L., & Munshin, S. (7)</p> <p>Posamentier, Alfred and Stepelman, Jay. (16)</p> <p>Articles from list</p>	<p>Search for model lesson on web ; examine for suggestions for discourse and questioning</p> <p>Use of manipulatives, a reflection</p> <p>Complete Content Portfolio</p>
5	<p>Technology</p> <p>a. Graphing Calculator</p> <p>b. Spreadsheets</p> <p>c. Internet</p>	<p>Huetinck, L., & Munshin, S. (7)</p> <p>Posamentier, Alfred and Stepelman, Jay. (16)</p>	<p>Prepare lesson to teach with technology using embedded technology (e.g. use Powerpoint to teach an aspect of the graphing</p>

		Articles from list	calculator or spreadsheets)
6	Assessment Strategies a. Assessment construction and evaluating student work b. Rubric design c. Authentic and alternative assessment	Huetinck, L., & Munshin, S. (7) Posamentier, Alfred and Stepelman, Jay. (16) Articles from list	Formative, summative NECAP - DOK Design 5-day unit plan that includes assessment. Prepare the rubric for assessment.
7	Classroom Management a. Monitoring student behavior b. Managing time and space c. Managing transitions	Huetinck, L., & Munshin, S. (7) Posamentier, Alfred and Stepelman, Jay. (16) Articles from list	Classroom management philosophy written reflection Compile components for the mini-TCWS for submission

4. REQUIREMENTS

SED 411

Midterm Exam	30%
Mathematics Investigations (peer learning group/individual)	15%
Case Studies(peer learning/individual)	10%
In-class lessons/ implementation(s)	5%
Content Portfolio completion	5%
Performance Task for Content Portfolio	5%
Article Critiques	5%
Peer Learning Activities (other than specific math investigations/cases)	5%

SED 412

Implemented Lesson Plans: Design, Implementation, and Reflection: (PAR model for lessons taught: original lesson plan and accompanying materials; reflection on strengths and areas to work on; what you would do differently next time particular content is taught.) Evaluation of performance in field placements is by site clinical instructors and college faculty.	50%
TCMWS (includes 5-day (minimum) unit plan)	50%

SED 410 (prior to Fall 2010)

Implemented Lesson Plans: Design, Implementation, and Reflection: (PAR model for lessons taught; original lesson plan; documentation of what you did/did not do; reflection on strengths, weaknesses, and what you would do differently the next time you teach this content). Evaluation of performance in clinical placements by site professionals and college faculty.	25%
Unit plan, including performance assessment	15%/20%
Mathematical investigations/ classwork	20%/10%

Exams based on readings, discussion, experiential knowledge; and assigned reflections	10%/25%
Completion Math Forum OMP in Problem Solving; mentored problem/ professional meetings	10%
Portfolios (Content with Performance Task and Preparing to Teach)	10%/5%
Journal article critiques with online discussion, journal entries & reflection essay	5%
Discipline Plan	5%/0%

5. RIC POLICIES

- Academic Dishonesty Policy (*Rhode Island College Handbook of Policies, Practices, and Regulations* (Spring 2010), Chapter 3: Academic policies and procedures. Pp. 32-34, section 3.9.1.):
http://www.ric.edu/administration/pdf/College_handbook_Chapter_3.pdf#28
- Request for Reasonable Accommodations for Students with Disabilities:
<http://www.ric.edu/disabilityservices/faq.php>
- The instructor reserves the right to change the syllabus at any point in the semester to accommodate learners' needs and pace of progress. Students will be notified in class of any changes.
- Students' assignments may be duplicated and utilized anonymously for the Department's program folios, for purposes of accreditation. All information that identifies a document as belonging to a particular student will be removed before it is used.