RHODE ISLAND COLLEGE
Feinstein School of Education and Human Development
Department of Elementary Education
Course Syllabus
Fall 2010

Course Number ELED 538-01

Course Title Mathematics MAT Practicum

Instructor Rainy Cotti
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Office Hours: M 8:00-9:00 am; TH 10:30-11:30 am; or by appointment

Course Location and Meeting Times

M,TH	12:00pm -1:50pm	HBS 215
TH	2:00pm -2:50pm	TBA

COURSE INFORMATION

Catalog Description (2009-2011): Foundation is provided in research and theory as applied to mathematics and associated teaching methods. Emphasis is on application and authentic assessment in practicum settings with diverse populations. Laboratory/conference required.

Extended Description: The course prepares candidates to teach mathematics to children in the elementary and middle schools. It focuses on the exploration of theories and methodologies related to modern mathematics programs whose goals are based on national standards and state grade level expectations for mathematics education. The emphasis in this course is on a cycle of active teaching, active learning, and ongoing assessment. Candidates will become acquainted with materials and models used in teaching mathematical concepts to all students, with emphasis on addressing cultural diversity and special populations. This course will also encourage the use of available technology in candidates' learning and teaching, and will require exploration of the vast resources available for getting and giving information. This includes the use of the computer to access the various components of the Internet such as the World Wide Web and electronic mail.

Prerequisites:

Admission to the Master of Arts in Teaching in elementary education program; CEP 552, ELED 500, FNED 546, minimum GPA of 3.0; any math prerequisite requirements listed on plan of study; or consent of department chair.

Relationship to the Professional Program: This is one of the six methods courses required for initial teacher certification. It provides fundamental experience in mathematics pedagogy as described by the National Council of Teachers of Mathematics' (NCTM) Principles and Standards for School Mathematics, Professional Standards for Teaching Mathematics, and Assessment Standards for School Mathematics, and the Rhode Island Grade Level Expectations for mathematics. It also conforms with and prepares candidates to meet the goals and indicators of the Rhode Island

Professional Teacher Standards. This course further provides candidates with opportunities to observe and make connections to the other core courses and methods courses, reflecting the critical nature of the multidisciplinary responsibilities of the elementary educator.

Relationship to FSEHD Conceptual Framework: This course emphasizes the synthesis of the academic content of mathematics with mathematics pedagogy and technology into new knowledge of how diverse children learn mathematics and how that learning is facilitated and evaluated. This includes a focus on multicultural issues in mathematics education and the role the mathematics educator plays in preparing children to live in a global society. An overarching aspect of the course involves the development of the reflective practitioner as students learn and implement mathematical knowledge, skills, and understandings, both in class and in their practicum experiences. The course requires meeting standards of professionalism delineated in the FSEHD's Conceptual Framework, NCTM's Professional Standards for Teaching Mathematics, and the Rhode Island Professional Teacher Standards (RIPTS).

COURSE TEXTS AND MATERIALS

Required Texts:

Burns, M. (2001). Teaching Arithmetic: Lessons for Introducing Multiplication, Grade 3. Sausalito, CA: Math Solutions Publications.

Ginsburg, H. Children's Arithmetic, 2nd ed. (1989). Texas: Pro-Ed, Inc. (no purchase-book loaned by instructor)

Van de Walle, J.; Karp, K; & Bay-Williams, J. (2010). Elementary and Middle School Mathematics: Teaching Developmentally, 7th ed. Boston: Pearson Education, Inc. **(Special Rhode Island College edition)**

COURSE OUTCOMES

"In the early stages of their careers, preservice teachers of mathematics are often involved in developing their knowledge, skills, understandings, and dispositions to teach mathematics. This development includes knowledge of mathematics, students, and teaching and involves having opportunities to integrate and apply this learning as practitioners" (NCTM's Professional Standards for Teaching Mathematics, 1991, p. 123).

The objectives for this course are organized within the framework of the Standards for the Professional Development of Teachers of Mathematics (NCTM). During and after this course, the preservice teacher will be able to:

1. construct, teach, and reflect upon mathematics units/lessons that model developmentally appropriate practices consonant with the NCTM Standards, Rhode Island K-8 Mathematics Grade Level Expectations (GLEs), Conceptual Framework of the FSEHD, and the Rhode Island Professional Teaching Standards: ***RIPTS 1,2,3,4,5,6,7,8,9,10,11; ACEI 1, 2.3, 3.1, 3.2, 3.3, 3.4, 3.5, 4, 5.1, 5.2***
2. display content knowledge of mathematics through coursework and assessments, and through construction of units and practicum teaching: ***RIPTS 1,2; ACEI 1, 2.3***
3. describe the importance of positive mathematical attitudes to the teaching of mathematics: ***RIPTS 1, 7, 10, 11; ACEI 5.1, 5.2***
4. explain and use varied methods of assessment that reflect both formative and summative evaluation, and use findings to plan/modify subsequent teaching: ***RIPTS 9; ACEI 4***

5. use technology appropriately in instructional planning and implementation of lessons, including the use of calculators, and the location and use of Internet resources: ***RIPTS 2,8; ACEI 1, 3.5***
6. describe relevant professional organizations and journals available for continued professional growth opportunities, and the importance of lifelong professional development in the teaching of mathematics: ***RIPTS 10; ACEI 5.1, 5.2***

Aspects of the Professional Standards for Teaching Mathematics embedded within the course outcomes include:

- The Learning Environment
  - Problem Solving/Thinking and Reasoning
  - Manipulatives
  - Technology
  - Communication
- Analysis of Teaching and Learning
  - Assessment
  - Evaluation
  - Mathematical Power
- Worthwhile Mathematical Tasks
  - Child Development
  - Connections
  - Content
    - Primary
    - Intermediate
- Classroom Discourse
  - Communication
  - Models of Teaching

COURSE REQUIREMENTS

Description	**Conceptual Framework**	**RIBTS**	**ACEI Standards**	**Course Outcomes**
Class Participation and Attendance (5%): This course has an underlying premise that candidates must construct their own knowledge and that working cooperatively fosters both intellectual and social development. It requires active participation in activities and discussions to optimize learning. Three or more unexcused absences will result in a lower grade.	Professionalism	7, 8, 10, 11	1, 2.3, 5.1, 5.2	1, 2, 3, 4, 5, 6
Reflective Assignment (4%): This assignment requires you to reflect on your Ginsburg reading and how you expect your teaching to be influenced as a result. A separate sheet listing the details will be provided.	Knowledge	2, 3, 4	1, 2.3, 5.2	1, 2, 3, 4

Action Research Assignment (4%): The Ginsburg book provides many examples of assessments used with children. You will select a minimum of two assessments that pique your interest and implement them with an appropriately aged child. You will write up the results, comparing them to the results described in the book. A separate sheet listing the details will be provided.	Plan-Act-Reflect Knowledge Pedagogy Diversity	9	4	4
Reading Analysis Assignment (4%): A sheet of critical questions associated with the reading of the Burns book will be given out and must be brought to class completed. The sheet will assist you in contributing to small group discussions about the structure and components of the unit described in the book. Papers will be collected and assessed.	Knowledge Pedagogy Diversity	2, 3, 4, 5, 8, 9	1, 2.3, 5.2	1, 2, 3, 4, 5
Review Guides (6%): There will be two review guides given during the semester. The review guides will be given out in the class prior to the date listed on the assignment sheet. They are to be completed at home and turned in on the date listed. They will be graded. The goals of the review guides are to: a) reinforce concepts taught in class; b) focus your attention on important aspects of the readings; c) help you assess your own progress and understandings of course content; and d) prepare you for the final exam.	Knowledge	2	1, 2.3	1, 2
Unit (25%): You are expected to work cooperatively with a partner or partners to complete a unit to be implemented in the practicum segment of the course. Specific details of the content of the units will be provided in class.	Plan-Act-Reflect Knowledge Pedagogy Diversity Professionalism	1, 2, 3, 4, 5, 7, 8, 9	1, 2.3, 3.1, 3.2, 3.3, 3.4, 3.5, 4, 5.1, 5.2	1, 2, 3, 4, 5
Practicum (10%): You will be placed in an elementary school classroom to assess learners of mathematics, plan mathematics lessons within a unit of instruction, act upon those plans, and reflect both on the success of those plans and on your own professional development as a facilitator of mathematics learning. The reflection piece of the practicum will be documented through written forms completed after teaching each lesson. Mathematics Journals will be used with the children to gain knowledge about their understanding of concepts you teach, thus enabling you to better gauge the influence of your teaching and to make modifications to subsequent lessons. The	Plan-Act-Reflect Knowledge Pedagogy Diversity Professionalism	2, 3, 4, 5, 6, 7, 8, 9, 10, 11	1, 2.3, 3.1, 3.2, 3.3, 3.4, 3.5, 4, 5.1, 5.2	1, 2, 3, 4, 5

cooperating teacher will assess your work with the children using a rubric. Specific instructions and times of practicum will be presented in class.				
Portfolio Artifact: Implemented Lesson Plan (15%): The FSEHD requires an Implemented Lesson Plan as part of your Preparing To Teach Portfolio/Admission to Student Teaching. One of the lessons from your unit will be used for this artifact. Further instructions will be provided in class.	Plan-Act-Reflect Knowledge Pedagogy Diversity	9	4	4
Technology (2%): You are expected to use the internet as a resource in finding information that will enhance your learning in this course. You must access and use Blackboard to view and print as instructed the syllabus and instructions for other assignments. You will also be asked to correspond via Blackboard about class assignments and may be asked to respond to issues related to mathematics education and the professional development of teachers of mathematics. **You must use your RIC email**.	Knowledge Professionalism	2, 8, 10	1, 3.5	5
Final Exam (25%): A final exam will be given to assess your knowledge of course content. You will be able to bring to the exam, and will turn in with the exam, notes (either 4 single-sided or 2 double-sided 8.5 x 11 inch pages) that correlate materials/techniques introduced in the course with concepts dealt with in the course.	Knowledge Pedagogy	1, 2, 3	1, 2.3, 3.1, 3.2, 3.3	1, 2, 3, 4, 5, 6

COURSE SCHEDULE, TOPICS, AND ASSIGNMENTS

Topics that will be dealt with in the course include Number and Operations, Geometry, Algebra, Measurement, and Data Analysis and Probability. Each topic will be examined through the five process standards of NCTM's Principles and Standards for School Mathematics: Problem Solving; Reasoning and Proof; Communication; Connections; and Representation. Each topic will also be related to the professional standards for the teaching of mathematics that are listed after the topics.

#	Date	Topics and Associated Readings	Assignment Due
1	M 8/30	**Topics:** Introduction and Course Overview; Standards Guiding Instruction; Attitude Survey; Introductory Activities Van de Walle: Chs. 1,2 Teaching Mathematics in the Era of the NCTM Standards; Exploring What It Means To Do Mathematics	Access Blackboard to view the syllabus and assignment instructions for the reflective assignments and the Burns Analysis Assignment.
2	TH 9/2	**Topics:** How Children Learn Mathematics Begin reading Ginsburg: Chs. 1-4 Concepts in Babies; Little Children Learning to Count; Learning Practical Arithmetic; Children's Learning to prepare for assignment due next week	
	M 9/6	**LABOR DAY – NO CLASSES**	
3	TH 9/9	**Topics:** Mathematics Development in Early Childhood; NCTM Standards; Mathematics Objectives and New England Common Assessment Program (NECAP) Mathematics GLEs (grade level expectations); New Standards Reference Exam	**Ginsburg Response #1**
4	M 9/13	**Topics:** Different Contexts for Teaching Mathematics Van de Walle: Ch. 7 Using Technology to Teach Mathematics	
5	TH 9/16	**Topics:** Teaching Concepts With Manipulatives; Lesson Plan Structure; Writing Objectives Read entire Burns book: Teaching Arithmetic: Lessons for Introducing Multiplication, Grade 3 and thoughtfully answer the questions for the assignment due next week. This reading is designed to provide background regarding important components of mathematics units.	
6	M 9/20	**Topics:** Geometry Van de Walle: Chs. 19,20 Developing Measurement Concepts; Geometric Thinking and Geometric Concepts	**Burns Reading Analysis Assignment**
7	TH 9/23	**Topics:** Geometry	
8	M 9/27	**Topics:** Unit Planning; Sample Units; Problem Solving Van de Walle: Ch. 3 Teaching Through Problem Solving Begin reading Ginsburg: Chs. 5-7 Learning About Symbols; Number Facts; Computing to prepare for assignment due next	**Review Guide #1 due**

		week.	
9	TH 9/30	**Topics:** Problem Solving	
10	M 10/4	**Topics:** Children's Literature; Children's Math Journals; Word Walls; Assessment Van de Walle: Chs. 4,5,6 Planning in the Problem-Based Classroom; Building Assessment into Instruction; Teaching Mathematics Equitably to All Children	
11	TH 10/7	**Topics:** Assessment Ginsburg: Chs. 8-11 Mistakes; Understanding; Learning Difficulties; Testing and Teaching	**Action Research Assignment**
	M 10/11	**COLUMBUS DAY – NO CLASSES**	
12	T 10/12 (Monday schedule at RIC)	**Topics:** Number and Operations-Early Number Development; Number Sense Van de Walle: Ch. 8 Developing Early Number Concepts and Number Sense	**Review Guide #2 due**
13	TH 10/14	**Topics:** Number and Operations-Whole Number Concepts Van de Walle: Chs. 9,10 Developing Meanings for the Operations; Helping Children Master the Basic Facts	
14	M 10/18	**Topics:** Number and Operations-Place Value Van de Walle: Chs. 11,12 Whole Number Place-Value Development; Strategies for Whole-Number Computation	**Unit: Lessons 1 & 2 Due**
15	TH 10/21	**Topics:** Number and Operations-Whole Number Operations Van de Walle: Chs. 13 Using Computational Estimation with Whole Numbers	
16	M 10/25	**Topics:** Data Analysis and Probability-Graphing; Children's Literature Van de Walle: Chs. 21, 22 Developing Concepts of Data Analysis; Exploring Concepts of Probability	**Revised Lessons 1 & 2 Due**: Make two sets, labeling one for your Instructor and one for your Cooperating Teacher
17	TH 10/28	**Topics:** Number and Operations-Fractions Van de Walle: Ch. 15 Developing Fraction Concepts	**Unit: Lessons 3 & 4 Due**
18	M 11/1	Practicum-Lesson #1	
19	TH 11/4	Practicum-Lesson #2	**Revised Lessons 3 & 4 Due**: Make two sets. Give one set to your Instructor and one to your Cooperating Teacher **Children's Math Journal**s; **Reflection Form #1**

20	M 11/8	Practicum-Lesson #3	**Unit: Lessons 5 & 6 Due**
21	W 11/10	(**College Closed on Th 11/11-Thursday classes meet Wednesday this week)—we will meet at RIC** **Topics:** Number and Operations-Fractions Van de Walle: Chs. 16, 17 Developing Strategies for Fraction Computation; Developing Concepts of Decimals and Percents	**Children's Math Journals; Reflection Forms #2&3**
22	M 11/15	Practicum-Lesson #4	**Revised Lessons 5 & 6 Due:** Make two sets. Give one set to your Instructor and one set to your Cooperating Teacher
23	TH 11/18	Practicum-Lesson #5	**Lessons 7 & 8 Due**
24	M 11/22	Practicum-Lesson #6	**Children's Math Journals; Reflection Forms #4&5**
	TH 11/26	**THANKSGIVING DAY – NO CLASSES**	
25	M 11/29	Practicum-Lesson #7	**Revised Lessons 7 & 8 Due:** Make two sets. Give one set to your Instructor and one to your Cooperating Teacher. Include a final revised Overview showing Lessons 1-8.
26	TH 12/2	Practicum-Lesson #8	**Children's Math Journals; Reflection Forms #6&7**
27	M 12/6	**Topics:** Algebra Van de Walle: Ch. 14 Algebraic Thinking: Generalizations, Patterns, and Functions	
28	TH 12/9	**Topics:** Algebra; Current Issues in Mathematics Education; Course Wrap-up Van de Walle: Ch. 23 Developing Concepts of Exponents, Integers, and Real Numbers	
		Final Exam (Wk 12/13-12/18)	

COURSE EVALUATION

Evaluation in this course will be concerned with your overall professional development in the teaching of mathematics. A major focus will be the attainment of a high level of growth in the course objectives. A variety of assessments will be used to evaluate progress, including reflective assignments, review guides, a reading analysis assignment, unit, practicum teaching and assignments, an assessment task, a final exam, technology, class attendance and participation. The percentages used to determine the final grade will be: Reflective Assignment-4%; Reading Analysis Assignment-4%; Action Research Assignment-4%; Review Guides-6%; Unit-25%, Practicum-10%; Portfolio Artifact: Implemented Lesson Plan-15%; Final Exam-25%; Technology-2%; Class Participation and Attendance-5%. Assignments that are late will not receive full credit.

The philosophy of this evaluation process is as follows: When you enter the door the first day you will be viewed as a teacher and you will be expected to act like a teacher. Our job as student and instructor, together, is to help you to develop the knowledge, skills, and understandings necessary to become an exemplary teacher. The intent is for you to become an autonomous critical and mathematical thinker, and to do so with a positive disposition.

Grading System:

93-100	=	A
90-92	=	A-
87-89	=	B+
83-86	=	B
80-82	=	B-
77-79	=	C+
73-76	=	C
70-72	=	C-
69 or below	=	F

REFERENCES

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Rhode Island K-8 Mathematics Grade Level Expectations (GLEs): http://www.ride.ri.gov/Instruction/gle.aspx

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Web site related to mathematics: Aviation and mathematics: http://www.planemath.com.

Web site related to mathematics: A Maths Dictionary for Kids by Jenny Eather: http://www.teachers.ash.org.au/jeather/maths/dictionary.html.

Other

Rhode Island College is committed to making reasonable efforts to assist individuals with documented disabilities. If you are seeking reasonable classroom accommodations under the Americans with Disabilities Act, and/or Section 504 of the Rehabilitation Act of 1973, you are required to register with the Student Life Office. The S.L.O. is located in Rm. 127 in Craig-Lee Hall. The phone number is 456-8061. To receive academic accommodations for this class, please obtain the proper S.L.O. forms and meet with me at the beginning of the semester.