

University of Texas at El Paso
College of Education, Department of Teacher Education
College of Science, Department of Mathematical Sciences

BLOCK-1A- FALL 2001

MATH 2303 "Properties of Real Numbers-I"
ELED 3310 "Teaching Mathematics in the Elementary School"
ELED 3302 "Principles and Practices of Learning in the Elementary School"

INTEGRATED SYLLABUS

MATH 2303: **Dr. Art Duval**
Office: **Bell 303**
Phone: **(915) 747-6846**
Fax: **(915) 747-6502**
E-mail: artduval@math.utep.edu
Website:
www.math.utep.edu/Faculty/duval/home.html
Sections: **M 8:00-9:20 am (Wiggs), W 8:00 - 9:20 am (EDUC 405)**
Office hrs: **M 2:30-3:30 pm, T 1:00-2:00 pm, F 10:00-11:00 am**

ELED 3310: **Dr. Mourat Tchoshanov**
Office: **EDUC 603**
Phone: **(915) 747-7668**
Fax: **(915) 747-7441**
E-mail: mouratt@utep.edu
Website:
<http://dmc.utep.edu/mouratt/>
Sections: **M 9:30-11:50 am (Wiggs)**
Office hrs: **M 1:00 - 3:00 pm T 1:00-3:00 pm**

ELED 3302: **Dr. Sally Blake**
Office: **EDUC 604**
Phone: **(915) 747-7675**
Fax: **(915) 747-7441**
E-mail: sblake@utep.edu
Website: **TBA**
Sections: **W 9:30-11:50 am (Wiggs)**
Office hrs: **TBA**

Required Text

Van de Walle, John A. (2000). *Elementary and Middle School Mathematics: Teaching Developmentally*. 4th Edition. Longman (www.longman.awl.com).

Course Materials

Projects will be distributed in the class

Readings will be distributed during class sessions

Recommended Manipulative Kit

Cuisenaire Manipulative Starter Kit. Cuisenaire Company of America (www.cuisenaire.com).

Block Objectives

1. Learn the mathematical theory underlying elementary and middle school mathematics.
2. Incorporate Learning Through Teaching approach in elementary pre-service teacher preparation.
3. Introduce the students to contemporary learning theories and innovative techniques of teaching and learning elementary and middle school mathematics based on the national (NCTM), local (TEKS) Standards, and ExCET competencies.
4. Provide the students an opportunity to create a successful learning environment while teaching mathematics in elementary and middle school.
5. Help the students overcome challenges, reflect upon and grow from their own experiences of learning and teaching mathematics.

Block Structure

The Block incorporates field-based team teaching approach. It is designed using the model of constructive pedagogical cycle (COPEC):

Learning - Rehearsing - Teaching - Reflecting.

Each cycle consists of the following activities: working on a conceptually rich, multistep mathematical project; micro-teaching the project before your peers, teaching this activity to elementary/middle school students, discussion and reflection on learning and teaching. Discussions will focus on how the lessons exemplify the given Standard, on how to assess the effectiveness of the lesson, and on modifications and improvements. The goal is to create a community of learners, acting and reflecting on learning and teaching mathematics, and learning how to become effective teachers of mathematics.

Block Philosophy

This Block is built on the following set of pedagogical beliefs:

- ❖ Teachers are supposed not only to teach, but also to help students learn.
- ❖ The teacher's role is to engage students by posing challenging problems and creating a mathematically friendly learning atmosphere.
- ❖ Conceptual learning leads procedural development.
- ❖ It is better to solve one problem by several methods than several problems by one method.
- ❖ The purpose of mathematical activity is not to get the right answer but to promote students' thinking; giving right answers to students is to do their thinking for them.
- ❖ It doesn't matter if you know how to solve 100 problems, it does matter how you approach the rest of them.
- ❖ Do not be afraid of making mistakes but be afraid of repeating them.
- ❖ Fun is a derivative of challenge.

Block Syllabus

Week	Date	Topic/Issue	Assignment
1.	M – 08/27	Introduction and Overview of the Syllabus. Reflection on Learning and Teaching of Mathematics. Doing Project 0 "Handshaking".	
	W - 08/29	Doing Project-1 "Lines" Discussion on Assessment Model.	Ch.5
2.	M - 09/03	Labor day - no classes.	
	W - 09/05	Doing Project-1. Discussion on Assessment Issues	Start OLD Pose Q1
3.	M - 09/10	Doing Project-2 "Blocks" <i>US School Mathematics from an International Perspective.</i> Rehearsing Micro-Lesson on Project-0 in Class (before peers).	Ch.1 LP-0 due
	W - 09/12	Doing Project-2. Discussion on Project-1. Teaching Project-0 at Wiggs. High Order Thinking Skills Development.	Pose Q2 P1 due Q1 due
4.	M - 09/17	Doing Project-3 "Tower of Hanoi" Discussion on <i>What It Means to Do Mathematics.</i> Discussion on <i>Development of Number Sense.</i>	Ch.2-4 Ch.6-11
	W - 09/19	Doing Project-3. Discussion on Project-2. Teaching Project-0 at Wiggs. High Order Thinking Skills Development.	P2 due Q2 due
5.	M - 09/24	Doing Project-4 "Area" Discussion on <i>Development of Geometric Concepts.</i> Rehearsing Micro-Lesson on Project-2.	Ch.16-17 LP-2 due
	W - 09/26	Doing Project-4. Discussion on Project-3. Teaching Project-2 at Wiggs. Discussion on Reflective Teaching.	P3 due Pose Q3
6.	M - 10/01	Doing Project-5 "Scaling Shapes" Discussion on <i>Development of Fraction Concepts.</i> Rehearsing Micro-Lesson on Project-3.	Ch.12-13 LP-3 due
	W - 10/03	Doing Project-6 "Divide & Conquer". Discussion on Project-4. Teaching Project-2 at Wiggs. Environmental Factors in Teaching.	P4 due Q3 due
7.	M - 10/08	Doing Project-5 Discussion on <i>Development of Ratio and Proportion Concepts.</i> Rehearsing Micro-Lesson on Project-4.	Quiz 1 Ch.15 LP-4 due
	W - 10/10	Doing Project-6. Teaching Project-4 at Wiggs. Understanding How Learning Occurs.	Pose Q4
8.	M - 10/15	Doing Project-7 "Length" Discussion on <i>Technology and School Mathematics.</i> Discussion on ExCET questions (Math Domain).	Ch.24 EQ due
	W - 10/17	Doing Project-7. Discussion on Project-5. Teaching Project-4 at Wiggs. Understanding How Learning Occurs.	P5 due Q4 due
9.	M - 10/22	Doing Project-8 "Square Roots" Discussion on <i>Exploring Concepts of Probability and Data Analysis.</i> Rehearsing Micro-Lesson on Project-5.	Ch.18 LP-5 due

	W - 10/24	Doing Project-8. Discussion on Project-7. Teaching Project-5 at Wiggs. Discussion on Motivating Students.	P7 due Pose Q5
10.	M - 10/29	Doing Project-9 "Pass the Pigs" Discussion on <i>ExCET questions</i> . Rehearsing Micro-Lesson on Project-7.	LP-7 due
	W - 10/31	Doing Project-9. Discussion on Project-8. Teaching Project-5 at Wiggs. Managing the Classroom Environment.	P8 due Pose Q6 Q5 due
11.	M - 11/05	Doing Project-9 "Pass the Pigs" Discussion on <i>Development of Algebraic Reasoning</i> .	Quiz 2 Ch.19
	W - 11/07	Doing Project-9. Discussion on Project-6. Teaching Project-7 at Wiggs. Managing the Classroom Environment.	P6 due Pose Q7 Q6 due
12.	M - 11/12	Doing Project-10 "Polydrons" Discussion on <i>Development of Function Concept</i> .	Ch.20
	W - 11/14	Doing Project-10. Discussion on Project-9. Teaching Project-7 at Wiggs. Texas Teaching Requirements.	P9 due Pose Q8 Q7 due
13.	M - 11/19	Doing Project-11 "Symmetry" Discussion on <i>Development of Exponent and Real Number Concept</i> . Rehearsing Micro-Lesson on Project-9.	Ch.21 LP-9 due
	W - 11/21	Doing Project-11. Discussion on Project-10. Teaching Project-9 at Wiggs. Texas Teaching Requirements.	P10 due Q8 due
14.	M - 11/26	Doing Project-12. Discussion on <i>ExCET questions</i> . Rehearsing Micro-Lesson on Project-10.	Ch.21 LP-10 due
	W - 11/28	Doing Project-12. Discussion on Project-11. Teaching Project-9 at Wiggs. Preparing for ExCET.	P11 due
15.	M - 12/03 W - 12/05	Review for final oral exam	

Abbreviations:

Ch chapter from Van de Walle (required text)
LP lesson-plan
P project

OLD on-line discussion
Q OLD question
EQ ExCET question

Course Requirements

1. It is expected that students will attend **all classes** and actively participate in working on projects and class discussions. Students are expected to prepare for each class

session. If a student misses a session, it is the responsibility of the student to make up for it.

2. **Math Projects** are weeklong investigations of conceptually rich multistep problems. During class, students will work on the projects individually and in groups, and later turn in a written report. You must write your report yourself; a private oral exam is always possible, in case of irregularities. You are expressly prohibited from consulting with anyone who has taken this course before, or seeing their notes or reports.

On the day reports are due, there will be a class discussion, with groups presenting various solutions.

3. **Quizzes** will cover material in the math projects.
4. On-going **On-Line Discussion (OLD)** includes students' own questions, thoughts, and classroom reflections. Each group of students is responsible for posing one question on the Electronic Bulletin Board and participating in all discussions.
5. **Teaching Micro-Lesson in Class** (30-45 min): each group of students will present one micro-lesson to their peers on a chosen project. Student-teachers must prepare and distribute the lesson plan (LP) prior to teaching the project in the class. The main criteria for evaluation of the micro-teaching are:

- ❖ the level of challenge (posing the project should motivate students' learning and address high-order thinking skills development. Remember that fun is a derivative of challenge, not the other way around.)
- ❖ the level of instructional sequence implementation (micro-teaching should include posing the project, organizing students into individual, peer and small group work, managing whole-class discussion, and conducting an extension of the project)
- ❖ the level of class involvement into the project activity (student-teachers should demonstrate good communicational skills, encourage students to share their ideas, orchestrate the whole class discussion)
- ❖ the level of instructional materials preparation and application (the use of a variety of instructional materials including manipulatives, visuals, and technology tools is encouraged during the micro-teaching)
- ❖ the level of assessment instruments application (assessment tools should include multi-level cognitive demand tasks and should address students' higher order thinking skills development).

6. **Videotaping the Best Lesson Fragment** (20-25 min): every student will arrange to have a videotape of his/her best mathematics lesson taught in an actual classroom setting at the elementary or middle school, with a narrative justifying why this teaching segment is considered his/her best work.

7. **Composing ExCET Questions:** each student will prepare 3 ExCET-type questions with scenarios relevant to classroom projects and present the best question during one of

the classroom discussions. Each question should be provided with a right answer and an explanation of the reasoning behind this answer.

8. **Final Panel Oral Exam:** each student will have an opportunity to demonstrate his/her content, pedagogy and teaching performance skills before the panel of experts including Block professors, school teachers and administrators.

The **Complete Portfolio** must include the following 3 components (all assignments, except videotape, are to be type-written, double-spaced, 12 pt. font, 1 inch margins):

- ❖ **Four Exemplary Projects**, two chosen by the instructors (the same two for all students) and two by each student. More work on these four projects may be included. There should also be a short (at most two pages) description of why these projects show the student's **best** work.
- ❖ **Two Exemplary Lesson Plans** for the chosen project, including detailed description of teacher's and students' actions, a set of classroom activities related to the national NCTM and local TEKS Standards, and examples of assessment instruments.
- ❖ **Videotape of the Best Lesson** (20-25 min) should include a fragment of student's teaching of mathematics in an actual classroom setting at one of the elementary or middle schools.

Deadline

Complete Portfolio

December 5, 2001

Grade Distribution

Activity	Dr. Duval	Dr. Tchoshanov	Dr. Blake
1. Classroom Discussions	5	10	10
2. Classroom Observations	5	-	-
3. Projects*	50	-	-
4. Exemplary projects	10	-	-
5. Quizzes	10	-	-
6. Lesson Plans	-	10	-
7. Micro-Teaching in Class	10	15	-
8. Reflections on Teaching	-	-	15
9. Wiggs Students' Assessment	-	15	15
10. Videotape of the Best Lesson	-	10	15
11. On-Line Discussion	-	10	15
12. ExCET Questions	-	10	10

13. Final Oral Exam	10	20	20
---------------------	----	----	----

* The lowest project grade will be dropped.

Grading Scale:

90 - 100 = **A** (Excellent - 4.0) 80 - 89 = **B** (Good - 3.0)
70 - 79 = **C** (Average - 2.0) 60 - 69 = **D** (Passing - 1.0)
0 - 59 = **F** (Failure - 0.0)

Notes

- ❖ Lateness to class is strongly discouraged. Many classes will begin with a group project/activity or classroom discussion. Your group will depend upon you to be present and prepared for class. Missed assignments must be completed. Every unexcused absence or lateness will reduce your final grade at the rate of 1 point per hour of missed class time.
- ❖ The schedule of reading assignments and classroom discussions may change over the course of the semester. Any changes to the syllabus will be announced in class. Every student is responsible for these changes whether or not he or she is present in class. It is recommended that students exchange telephone numbers and/or e-mail addresses with a few of their peers.
- ❖ Please turn in all assignments on the date they are due, at the beginning of class. One letter grade will be deducted for late assignments.
- ❖ Please feel free to speak to us regarding any questions or concerns. You can reach us during office hours, speak to us after class, call or e-mail us.