**University of Arkansas**

**College of Education and Health Professions**

**Curriculum and Instruction**

**SYLLABUS Summer 2013**

**I. Descriptive Information**

1. Program Affiliation: Secondary Education

Course Number and Title: CIED 5243 Special Methods of Instruction I

B. Catalog Description:

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|  | Study of the methods and materials in the special content areas. Includes philosophical, cognitive, and psychological dimensions of teaching the content area. The planning of instruction, microteaching, and the development of instructional materials are included. |
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C. Prerequisites: Entrance in MAT program.

D. Intended Audience: Preservice math teachers

E. Instructor: Laura B. Kent, Associate Professor, University of Arkansas

Guest Lecturers: Mandy Bain, Har -ber High School, Springdale

Office: 303 Peabody, 575-8762, cell # 305-0330

email: **lkent@uark.edu**

1. Office Hours: before class and by appt.

G. Class Meeting Dates/Times/locations: M-F 9:15-10:45 a.m., Peabody 309

**II. Course Goals and Objectives**

Relationship to the knowledge base: Initial teacher preparation. This is a pedagogical studies course, which provides the Scholar Practitioner with the knowledge and ability to incorporate the latest theory and research in secondary mathematics education philosophy.

**A. Goals**

This course is designed to provide and expanded view about and experience with methods, materials, technology, and procedures for teaching mathematics.

**B. Competencies**

Students will be able to:

1. relate current research on middle and high school students' mathematical thinking to classroom practice;

2. know and critique current curricular materials including those related to technology;

3. relate historical developments in mathematics education to current goals and trends such as integrated mathematics and problem solving;

1. know and use knowledge of students' mathematical thinking as the basis for assessment and instructional decision-making in one or more topics, ie., equality, fractions, etc.
2. examine their beliefs about the goals, methods, and content of secondary school mathematics;

6. design and implement mathematics lessons that address issues of diversity of learners in middle and high schools.

**III. Required Texts and Materials**

**Readings will be distributed through hard copy or email.**

**Websites:** [**www.nctm.org**](http://www.nctm.org)**, http://www.corestandards.org/**

**Required:**

Lockhart, P. (2009). *A mathematicians lament: How school cheats us out of our most fascinating and imaginative art form*. NewYork: Bellevue Literary Press.

**Optional:**

Empson, S. B., & Levi, L. (2011). *Extending children’s mathematics: Fractions and decimals*. Portsmouth, NH: Heinemann.

**IV. Academic Requirements (see pages 3-4)**

**V. Administrative Requirements**

Class attendance and participation.

**VI. Evaluation**

1. Readings and class Participation - 20 points

2. Lesson Plan Assignments (2) (15 points each) - 30 points

3. Student Membership in NCTM/ACTM - 10 points

4. Interview Assignment: Equality - 20 points

5. Interview Assignment: Fractions - 20 points

# VII. Grading

Grades will be based on the following 100 point scale:

90-100 A

80-89 B

70-79 C

60-69 D

<60 F

**VIII. Major Topics**

1. Mathematics as Problem Solving

2. Students' Mathematical Thinking

3. Instructional Decision-making

4. Research in Mathematics Education

5. Mathematics Curricula: Past and Present

6. Assessment

**Description of Academic Requirements:**

1. Readings and Class Participation. Reading all assignments and verbally participating in class are critical for your own learning and reflection on best methods for teaching mathematics.

18-20 Points - Consistently participates in class and provides evidence that the readings were completed

16-17 Points - participates in class but does not consistently provide evidence that readings were completed

15 points or less - Does not verbally participate in class discussions and does not complete readings

2. Lesson Plan Assignments For this assignment, you will write two lesson plans. One will focus on Geometry, and one will focus on Statistics. Additional information will be given about this in class.

3. Equality/Relational Thinking Assessment Interview & Writeup -

For this assignment, you will pose a series of open number sentences and true false statements to someone you know. You will analyze his/her responses and write a 2-3 page paper describing these results.

4. Fraction Interview/Assessment Write-up

-You will pose a series of fraction tasks to a person of your choice.

- present your tasks to him/her and observe how he/she solves them.

-Write a 3-5 page paper utilizing the following format:

1. Introduction that provides background academic information and interests.
2. Analysis of his/her performance on the tasks using the following sequence **for each task**:
   * The task used
   * Description of strategy and/or picture of the students’ work
   * Summary of the interview results that includes an overall description of the student’s knowledge of ratio/proportion.
3. Conclusion that includes implications of your results for your future whole class instruction –
4. Choose one problem from your interview that you would pose to your whole class. Describe how you would pose the problem; What kinds of strategies would you look for? What connections could be made by having students share those strategies?

**TENTATIVE Course Outline – Summer 2013**

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| **Date** | **Readings/Topic** |
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| 7/8 | Introductions/Overview; Syllabus; Common Core State Standards for Mathematics; Research Projects |
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| 7/9 | Standards for Mathematical Practice |
|  |  |
| 7/10 | Lesson Planning |
|  | Geometry (Bain) |
| 7/11 |  |
| 7/12 | Geometry (Bain) |
|  |
|  | Statistics (Bain) |
| 7/15 |  |
|  |  |
| 7/16 | TBA – Read Knuth Article for 7/18 |
|  | TBA – Read Ginsburg Article for 7/19 |
| 7/17 |  |
| 7/18 | Read Knuth article on Equality prior to today  **Due:** Geometry Lesson Plan (use format presented by Bain) |
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| 7/19 | Equality & Relational Thinking |
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| 7/22 | Advanced Mathematics Topics – TBA (Bain) |
|  |  |
|  | Algebraic Topics (cont) |
| 7/23 | **Due:** Statistics Lesson Plan |
|  | Algebraic Topics (cont)  **Due:** Equality Interview Write-up |
| 7/24 |  |
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| 7/25 | Problem Posing Lesson Format |
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| 7/26 | Problem posing Lesson Format (cont) |
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| 7/29 | CMASE (Fractions) (8:30-10:30)  Common Core Standards for Mathematical Practice write up due |
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| 7/30 | CMASE (Fractions – cont) (8:30-10:30) |
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| 7/31 | CMASE (Fractions-cont) (8:30-10:30) |
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| 8/1 | Fractions/Proportional reasoning |
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| 8/2 | Summary – Looking ahead to the fall internship/methods |
|  | **Due:** Fraction Interview Write-up |
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