E343 & E541 Mathematics in the Elementary School  
Fall 2010

Wednesday’s 10 a.m. to 12:30 p.m. on January 12, 19, 26 and February 2 – Hawthorn Hall 332  
With 1 p.m. to 3:45 p.m. – Hawthorn Hall 329  
And Monday 9 a.m. to 11:45 a.m. - Hawthorn Hall 329

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E-mail: dhdodson@iun.edu  
Phone: 980-6516 (Office)

I. COURSE DESCRIPTION

Bulletin Description
This course emphasizes the developmental nature of the arithmetic process and its place as an effective tool  
in the experiences of the elementary school child. This course is offered each Fall and Spring for those  
students in the Teacher Education Program and have successfully completed MATH T101 and MATH  
T102. Completion of MATH T103 is recommended.

Purpose
Students will have ample opportunities for using math manipulatives and technology as they teach  
elementary students in the accompanying field experience course.

Field Experience
Students enrolled in E343 will also enroll in M304 for an elementary school field experience. In M304,  
students observe and participate in the use of methods and materials of elementary schools and reflect on  
how they relate to the diversity of learners.

II. THE REFLECTIVE PROFESSIONAL MODEL

School of Education Conceptual Framework
E343 is part of the Teacher Education Program (TEP), the foundation of which is a research-based conceptual  
framework that incorporates outcomes, all of which together are designed to prepare a Reflective  
Professional. The following table is a correlation of E343 course objectives and the nine Conceptual  
Framework TEP outcomes. The asterisk indicate the outcomes aligned with portfolio artifacts created during  
this course.

<table>
<thead>
<tr>
<th>Program Outcomes</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Communication Skills</td>
<td>2</td>
</tr>
<tr>
<td>2. Higher Order Thinking Skills</td>
<td>4</td>
</tr>
<tr>
<td>3. Instructional Media &amp; Technology</td>
<td>5</td>
</tr>
<tr>
<td>4. Learning &amp; Development</td>
<td>7</td>
</tr>
<tr>
<td>5. School Culture &amp; Context</td>
<td>NA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Program Outcomes</th>
<th>Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Instructional Design &amp; Delivery*</td>
<td>4, 6</td>
</tr>
<tr>
<td>7. Classroom Management</td>
<td>3</td>
</tr>
<tr>
<td>8. Assessment &amp; Evaluation</td>
<td>4</td>
</tr>
<tr>
<td>9. Professional Development</td>
<td>2</td>
</tr>
<tr>
<td>~Teaching Dispositions—see p. 2</td>
<td>6</td>
</tr>
</tbody>
</table>

*A course assignment(s) in this area will guide students through the preparation of a TEP Portfolio artifact for this Program  
Outcome. NA – not addressed

This course also reflects the Interstate New Teacher Assessment and Support Consortium (INTASC) Principals  
and the Developmental Standards of the Indiana Department of Professional Standards (IDPS). A chart  
showing the correlation between E343 objectives and these principals and standards is found on page 7.
III. COURSE GOALS & OBJECTIVES

Goal

The goal of E343 is to help students become creative, effective, and reflective elementary school math teachers in a manner consistent with the National Council of Teachers of Mathematics (NCTM), the Indiana Department of Professional Standards (IDPS), and the School of Education’s Reflective Professional Model (see chart above).

Objectives

In order to teach mathematics so that ALL students can learn – especially the ethnically, socially diverse, and special needs populations common in today’s schools – preservice students enrolled in this elementary school mathematics methods course will:

1. Demonstrate teaching with technology skills by effectively using technology to support classroom instruction:
   - In a History of a Mathematician project
   - In showing evidence of your Impact on Student Learning of Mathematics project
   - In lessons you include in your Unit Plan
   - And in class demonstrations and presentations

2. Design and deliver an instructional unit with lesson plans that [aligns with artifact Score Sheet 6(1)]:
   - Display knowledge of the mathematical content and accurately identifies the major concepts to be taught; alignment with state and professional standards
   - Includes strategies for the incorporation of teaching several disciplines and engages the learners in mathematical inquiry and problem based learning
   - Includes a variety of instructional strategies for promoting higher order thinking
   - Includes teaching with math manipulatives and technology
   - Includes a teaching schedule
   - Includes course assignments
   - Includes an assessment plan
   - Is sensitive to cultural and learning differences and adjusts instruction to accommodate differing learning needs and styles

3. Participate actively in their professional development by (Conceptual Framework Program Outcome 9):
   - Joining NCTM, reading, and sharing professional literature
   - Reflecting on their professional growth as a teacher of mathematics

4. Assume responsibility for meeting the School of Education Professional Teaching Dispositions:
   - Attendance should be dependable, arrival and departure should be on time, and appearance and actions should be professional.
   - Mathematics taught should connect to the students’ world
   - Keys to promoting students’ active learning include organization and preparation
   - Verbally and written ideas should be expressed/communicated clearly and appropriately
   - Multiple teaching approaches and technology should be used with students.
   - Classroom management should be student-centered, and students should be treated with respect and care.
   - Students from diverse backgrounds deserve respect and understanding
   - Cooperation should be facilitated in the classroom and throughout the school and community
   - Students’ progress should be tracked (monitored) with instructional adjustments made to meet their needs
   - Constructive criticism and suggestions should be encouraged and welcomed
   - Enthusiasm and commitment are necessary to become an effective teacher
   - Evaluate their dispositions in the class and at the conclusion of each field day.
IV. MATERIALS

**Required Reading**
Indiana Department of Education: [www.doe.state.in.us/standards](http://www.doe.state.in.us/standards)

NCTM: [www.nctm.org](http://www.nctm.org)

Additional journal articles

**Required Materials**
You may need to purchase miscellaneous materials or manipulatives for in class and/or field activities.

**Recommended Books**


**Internet Resources**
- National Council of Teachers of Mathematics: [www.nctm.org](http://www.nctm.org)
- Marilyn Burn’s Math Solutions: [www.mathsolutions.com](http://www.mathsolutions.com)
- Texas Instruments: [www.education.ti.com](http://www.education.ti.com)
- Indiana Professional Standards Board: [http://www.IN.gov/psb](http://www.IN.gov/psb) and [http://www.doe.in.gov/communications/educators.html](http://www.doe.in.gov/communications/educators.html)
- Eisenhower National Clearing House: [http://www.enc.org](http://www.enc.org)

V. COURSE REQUIREMENTS & EXPECTATIONS

**General Expectations**
You are required to demonstrate professional behavior and attitudes during class and as a student volunteering your time at an off-campus location by:

1. Arriving on time
2. Being prepared to participate and learn
3. Articulating your point-of-view
4. Questioning/interacting others in a professional manner
5. Journaling as a reflective practioner
6. No putdowns, and
7. Not talking when others are talking

An important component in this learning experience is the respect and discussion you bring to each class. Your presence and thoughts are important, as are your peers. We all gain from each other’s active involvement in this journey.

All class correspondence will take place on Oncourse. If you have registered for E541, you will be added as a participant in E343 for Oncourse announcements and correspondence. Please update your Oncourse
profile with a current phone and e-mail address so that you may be reached in the event of an emergency.

Attendance
You are expected to arrive on time, attend EVERY class, and participate in all class activities and discussions. Absences due to religious observance (follow university procedures), doctor’s appointment (bring a note), job interview, personal illness, death in family, emergency, etc. are unfortunate. In the event that an absence is unavoidable, you must notify me in advance if possible or as soon as possible if the absence is unexpected. Two hours and 30 minutes (one class if your class meets once per week) of unavoidable absences are permissible, but notification is required. For each additional class missed, points are deducted from the total points earned for the semester. No student with an unexcused absence will receive an A. No student with three or more unexcused absences will receive a grade higher than B-. After an absence, you should obtain class notes, hand-outs, other information missed from your classmates.

Active Class Participation
Class participation is an important part of your final grade. Objectives you are expected to master are listed on page 2, and are met through active participation in class activities and discussions, and through group projects. In order to actively engage in critical thinking about teaching and educational issues, you are expected to keep up with the readings and to find outside resources to substantiate your point-of-view for formal assignments. Active participation is important because (1) class activities are designed to be useful to you as a prospective teacher; (2) assessment (quizzes, exams, etc.) will be based on activities in class; (3) some class meetings will be spent doing group activities—if you are not there on those days you may be asked to complete activities on your own—and; (4) I keep track of attendance and make notes about class participation. Remember, your participation (or lack thereof) is a reflection of your commitment to the dispositions expected of developing teachers, especially in regard to creating a positive learning environment. Because our classroom is a shared environment EVERYONE has a responsibility for creating and maintaining a positive environment which is beneficial to ALL. Non-participants may expect points reduced from their final grade.

Assignments
E343 assignments integrate the School of Education Program Outcomes and E343 course objectives (see pages 1 and 2), and assist you in creating artifacts that can be used in your professional portfolio—IF you receive a score of 3 or better. The SOE Scoresheet 6(1) (Instructional Design and Delivery: Integrated Unit Plan) will be used. Unless otherwise noted, all assignments to be reviewed (in-class, informal and formal) should be placed in the bucket before the end of class on the day that they are due. If you will be unavoidably absent, send assignments which are due with a “study buddy” or e-mail them to me. The following is a list and general overview of major assignments for the semester.

(1) Informal Assignments
There will be several informal assignments throughout the semester. Informal assignments are intended to be quick, informal “tasks” that you need to attend to, or assignments that help you think about important teaching-learning issues in order to develop your understanding of what it is like to be a teacher. In general, these assignments are open-ended and should take you no more than 10-15 minutes to prepare. Although I do not “grade” informal assignments, you do receive points if you turn them in on time and completed; otherwise you receive no credit. By not measuring the “quality” of informal assignments, you are free to try your own teaching ideas with no penalty if an idea does not work out.

(2) Critique of TCM Article
Surf the NCTM website for activities which use manipulatives which could be used in your field experience or future classroom. Students should be prepared to share one mini-manipulative/article lesson each week until their four lessons have been shared. These mini-lessons do not have to be aligned with your selected unit plan, but should include an alignment with state standards and referenced with APA format. At least one presentation must include the use of technology. Please include a copy of the original article with your critique. Please refer to additional write-up on this assignment.

(3) Math Manipulatives Tool Kit
Your instructor will present lessons on the various manipulatives available to you throughout the semester. Manipulative activities are presented to leave the student confident in their proper use. Students will search for lessons on the manipulatives presented in class. Your goal is to create an organized file of manipulative lessons which can be easily retrieved and quickly presented in the classroom. Your collection should include the following:

- The source for your manipulative or template, including alignment of the use of your manipulatives with individual performance standards,
- A sequence of lesson activities from easy to challenging, covering a broad gamut of uses for this manipulative,
- Your instructor and (perhaps) each student need to receive a copy of your manipulative lessons.
- All information must be source referenced, and
- Noted manipulatives lessons must come from materials available in the IU Northwest Library.
- Organize your lessons into a format of your choosing which is useful and accessible. You will showcase your Math Manipulatives Tool Kit during the last class meeting.
- Your manipulative Tool Kit will also include the TCM articles which you presented, your History of a Mathematician project, and all of your field assignments.
- You will also include a reflection on the manipulatives used in the E343 class. Include: *How would you start this lesson? When would you use these manipulatives? What key moves or questions are important to display?*

(4) Integrated Mathematics Unit Plan

During your M304 field experience, you will create and teach a mathematics unit to elementary school math students. Scoresheet 6(1) requires that you include in your unit:

- Display knowledge of content and accurately identify major concepts to be taught which are aligned with state standards.
- Include strategies for the incorporation of teaching several disciplines (science, history).
- A variety of strategies that promote higher order thinking skills (HOTS).
- Include a unit overview: rational, concept, objectives, schedule, assignments and standards (6(1))
- An introduction (anticipatory or exploration activity)
- And a conclusion (assessment) lesson (6(1))
- APA format must be used to identify all lesson plan sources.
- You will share and teach a portion of your Unit Plan in (E343) class.

(5) History of Mathematics

This project is focused on meeting the demands of using technology in the classroom. You will assemble a collection of famous mathematicians. Each student will add a “chapter” to your collection. Each mathematician’s history must include a description of the mathematics that made him/her famous, the events or challenges that led to the mathematics discovered, and the impact on that branch of mathematics or in other disciplines. You should applications of this mathematicians work on the mathematics that you will be teaching in the K-6 environment.

This assignment may be used as an artifact for your TEP Portfolio. You are responsible for teaching with technology and assigning technology into your lessons.

(6) Service Learning Project: FIRST LEGO League, (Sunday) November 20, 2011

This is IU Northwest’s fifth year to sponsor the FIRST LEGO League. We will be organizing and judging the 32 teams of 3rd -6th graders who fill the gym.

(7) Plan a special event for the Fall semester (For example: Pi Day, 100th day of school, Einstein’s Birthday, National Metric Week). Be prepared to share activities with your peers both electronically and with a hard copy.
(8) Learning Journal Self-Assessment

At the end of each field class you will assess your learning by submitting a word document attached to a message in Oncourse by Thursday evening (11:59 p.m.) each week. You will use the SOE professional dispositions as a guide for your reflections (copy and paste them into your journal). Only one reflection must be submitted weekly. Late reflections will be penalized.

Late Assignments
You are a college student and I expect all assignments to be submitted on time if you expect to receive full credit. Grades for formal assignments and projects (items above) are reduced by 10% for each school day they are late. For example, a major project worth 50 points that is turned in two days late will receive 10 fewer points (50 points x 10% per day x 2 days) than if it had been turned in on time. If you will be unavoidably absent, send assignments with a “study buddy” or e-mail them to me to avoid a late penalty—there is a 5% printing fee. Failure to turn in assignments on time can adversely affect your grade.

Plagiarism
Plagiarism is academic dishonesty and strictly prohibited. Students sometimes commit plagiarism without understanding they are doing so. Avoid this by visiting http://www.education.indiana.edu/~frick/plagiarism/ and taking the quiz. If you’re still uncertain about what constitutes plagiarism, it is your responsibility to ask for my assistance. I visit sites like School Sucks, Other Peoples Papers, and Evil House of Cheats on a regular basis so that I will know what my students can access on the Internet. I also submit papers that may have been plagiarized to Turn It In, an anti-plagiarism website. Students who plagiarize will be reported and receive a grade of “0” on the assignment. Plagiarism can also result in course failure and university dismissal. In cases of suspected plagiarism, university policy will be followed.

VI. GRADING/EVALUATION

Grading Standards
An A represents outstanding performance and most students should expect grades ranging between B+ and C. Quality, not quantity counts. Effort alone does not guarantee above average grades. Grades for assignments are based on the level of detail, the soundness of justification of your ideas, and the quality of writing. Assignments must be well organized and demonstrate that you have considered alternatives and have solid support for your opinions. Sentences should be clear and well constructed, with proper grammar, spelling, and punctuation. All papers must be typed on a word processor. If you are concerned about your writing, before you hand them in take your assignments to the Writing Lab on the fourth floor of Hawthorn Hall for proofreading services and writing assistance.**Should you require adaptations to meet course requirements, it is your responsibility to notify the instructor within the first few weeks of class.

Grading Rubrics
Grades are not given, they are earned. By using the assignment rubric as a design specs while working on assignments you can help ensure that you don’t lose points needlessly. You will be asked to print a copy of each rubric and paper clip it on top as a cover sheet. There is a 5% secretarial fee for printing out or writing names or numbers on rubrics and assignments. There is a 10% investigator’s fee for identifying rubrics and assignments without names or other identification. Links to rubrics are available on the course website.
Calculation of Final Grades

To calculate your grade: (1) add up the points you earned for major projects and assignments, and active participation (your estimate), (2) subtract 5 points for EACH missed class not made-up, and (3) divide by the total POSSIBLE POINTS. The scale below is used to determine course grades:

**Grading Scale**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100-96</td>
</tr>
<tr>
<td>A-</td>
<td>95-90</td>
</tr>
<tr>
<td>B+</td>
<td>89-87</td>
</tr>
<tr>
<td>B</td>
<td>86-84</td>
</tr>
<tr>
<td>B-</td>
<td>83-80</td>
</tr>
<tr>
<td>C+</td>
<td>79-77</td>
</tr>
<tr>
<td>C</td>
<td>76-74</td>
</tr>
<tr>
<td>C-</td>
<td>73-70</td>
</tr>
<tr>
<td>D+</td>
<td>69-67</td>
</tr>
<tr>
<td>D</td>
<td>66-64</td>
</tr>
<tr>
<td>D-</td>
<td>63-60</td>
</tr>
<tr>
<td>F</td>
<td>59-0</td>
</tr>
</tbody>
</table>

Grade Concerns & Appeals

In order to allow time for thoughtful reflection, I do not discuss major papers and projects with individual students on the day they are returned. Please make an appointment with Dr. Dodson to discuss your questions and concerns in private from your classmates.

VII. BIBLIOGRAPHY


VIII. PRINCIPLES OF THE INTERSTATE NEW TEACHER ASSESSMENT AND SUPPORT CONSORTIUM (INTASC)

The INTASC Principals are addressed by the Conceptual Model that underlies all of the initial licensure programs in the School of Education. A complete listing and discussion of these is found at the following website: [http://www.state.in.us/psb/future/future.htm](http://www.state.in.us/psb/future/future.htm). The 10 Principles and how E343 objectives relate to them is detailed on the next page. As this is an introductory course, only a few Principal are addressed.

<table>
<thead>
<tr>
<th>INTASC Principals</th>
<th>Course Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Knowledge of Subject Matter</td>
<td>4</td>
</tr>
<tr>
<td>2. Knowledge of Human Development &amp; Learning</td>
<td>NA</td>
</tr>
<tr>
<td>3. Adapting Instruction for Individual Needs</td>
<td>4</td>
</tr>
<tr>
<td>4. Multiple Instructional Strategies</td>
<td>2, 3</td>
</tr>
<tr>
<td>5. Classroom Motivation &amp; Management</td>
<td>2, 3, 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INTASC Principals</th>
<th>Course Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Communication Skills</td>
<td>5, 6, 7</td>
</tr>
<tr>
<td>7. Instructional Planning Skills</td>
<td>4, 6, 7</td>
</tr>
<tr>
<td>8. Assessment &amp; Student Learning</td>
<td>4, 6</td>
</tr>
<tr>
<td>9. Professional Commitment &amp; Responsibility</td>
<td>2</td>
</tr>
<tr>
<td>10. School &amp; Community Partnerships</td>
<td>NA</td>
</tr>
</tbody>
</table>

NA – not addressed in this course
IX. INDIANA DEPARTMENT OF PROFESSIONAL STANDARDS (IDPS)

The Indiana Department of Professional Standards (IDPS) has established Developmental Standards for teachers of Early Childhood, Elementary Childhood, Early Adolescence, and Adolescence & Young Adults. A complete listing and discussion of these is found at [http://www.state.in.us/psb/future/future.htm](http://www.state.in.us/psb/future/future.htm). The table on the next page show how E343 objectives are related to the IDPS Developmental Standards.

NA – not addressed in this course

<table>
<thead>
<tr>
<th>Teachers of Elementary Childhood</th>
<th>Course Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Child Development &amp; Growth</td>
<td>NA</td>
</tr>
<tr>
<td>2. Curriculum</td>
<td>4</td>
</tr>
<tr>
<td>3. Instruction</td>
<td>4, 7</td>
</tr>
<tr>
<td>4. Assessment</td>
<td>4</td>
</tr>
<tr>
<td>5. Professional Role</td>
<td>2, 6</td>
</tr>
<tr>
<td>6. Student Learning</td>
<td>4, 6</td>
</tr>
<tr>
<td>7. Family &amp; Community</td>
<td>6</td>
</tr>
<tr>
<td>8. Professional Development</td>
<td>2</td>
</tr>
</tbody>
</table>

NA – not addressed in this course

A Final Note

I am here to help you learn how to become the best teacher you can be. However, I cannot do that by myself. You must become an active participant in your own learning. Let me know if you are not getting as much out of this course as you think you should. My door is always open should you wish to talk about E343 or teaching. I look forward to an exciting semester of sharing my love for mathematics and teaching with you!

If you are a student with a verified disability, please give to your professor, the letter of accommodation provided by the Disability Services Coordinator. Students who have a disability, or think they have a disability (e.g. psychiatric, attention, learning, vision, hearing, physical, or systemic), are invited to contact the disability services coordinator for a confidential discussion at 219-980-6943.
### IX. TENTATIVE SCHEDULE

*Note: This schedule is tentative and may change as the semester unfolds. You will be notified of changes.*

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>Topics Addressed</th>
<th>Assignments Due/Article Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 31, 10 a.m. to 3:45 p.m.</td>
<td>Shape Sifter, Silverstein Ice Cream, Syllabus, NCTM TCM, CFP’s</td>
<td></td>
</tr>
<tr>
<td>September 7, 9 a.m. to 3:45 p.m.</td>
<td>*Pentominoes, Curriculum Library, $1.00 Word Riddle Book, Lesson Format, Bloom’s Taxonomy</td>
<td></td>
</tr>
<tr>
<td>September 14, 9 a.m. to 3:45 p.m.</td>
<td>Origami, Touch Math, patterns of 9</td>
<td></td>
</tr>
<tr>
<td>September 21, 9 a.m. to 3:45 p.m.</td>
<td>LEGO’s, Master Ruler, measurement</td>
<td></td>
</tr>
<tr>
<td>September 26, 9 to 11:45</td>
<td>*Cuisenaire© rods, Sieve of Eratosthenes, Rules of Divisibility</td>
<td></td>
</tr>
<tr>
<td>October 3, 9 to 11:45</td>
<td>Base 10 Blocks, abacus, Square Roots, Fraction circles and Marilyn Burn’s Fraction Kit</td>
<td></td>
</tr>
<tr>
<td>October 10, 9 to 11:45</td>
<td>Special Event Day</td>
<td>NCTM’s Metric Week</td>
</tr>
<tr>
<td>October 17, 9 to 11:45</td>
<td>4 color Map Thm, Four 4’s, 2 Color Counters/Tiles</td>
<td></td>
</tr>
<tr>
<td>October 24, 9 to 11:45</td>
<td>Hands On Equations©</td>
<td></td>
</tr>
<tr>
<td>October 31, 9 to 11:45</td>
<td>Dirty Dozen, Lattice Multiplication, Finger Math with 9’s and 6 – 10’s,</td>
<td></td>
</tr>
<tr>
<td>November 7, 9 to 11:45</td>
<td>Pattern Blocks, Sudoku, Mira™</td>
<td></td>
</tr>
<tr>
<td>November 14, 9 to 11:45</td>
<td>Calendar Math, Geoboards, attribute blocks</td>
<td>Unit Plan Due</td>
</tr>
<tr>
<td>November 20, 10:30 to 4:30</td>
<td>FIRST LEGO League</td>
<td></td>
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<tr>
<td>November 21, 9 to 11:45</td>
<td>*Tangrams Ed Emberley’s Picture Pie</td>
<td></td>
</tr>
<tr>
<td>November 28, 9 to 11:45</td>
<td>History of Mathematician Presentations</td>
<td></td>
</tr>
<tr>
<td>December 5, 9 to 11:45</td>
<td>Unit Plan Lesson Presentation</td>
<td></td>
</tr>
<tr>
<td>December 12, 9 to 11:45</td>
<td>Field Work, Journal and Tool Kit Due</td>
<td></td>
</tr>
</tbody>
</table>
We will begin each class with a 10 minute quiz over the previous class information. During this time, you will present to Dr. Dodson (in her crate) your tool kit folder with your lessons ready for this class meeting time. For example, next week we will be discussing Pentominoes. You will put your file folder in the crate, I will look at your lessons and return the folder to you as quickly as possible.

**Quizzes, announced & unannounced, will be added to the schedule as needed.**