Flex Course Request

College: EHE

Course Bulletin Listing: EDU T&L - EDUCATION: TEACHING & LEARNING

Course Prefix: - Course Number: 812

Generic course or decimal subdivision?

Full Course Title: Mathematics in Elementary Schools

Level: Graduate

Credit Hours: 3

Proposed Effective Year: 12

Proposed Effective Term: Winter Quarter

Previous term(s) of offering and enrollment:

Flexibly Scheduled/Off-Campus/Workshop Course Information

Course Description:
Applications of research and theory to improve children's competence and problem solving; organization of instructional programs and contemporary instructional questions.

Offering Pattern:
- This year
- Every other year

GEC Course

General Course Information Statement

Offered in Distance Learning Format?

Service Learning?

Date Range(s):

https://bpmprod.itprod.ohio-state.edu/courseApproval/flexCourse.aspx?ActivationID={7...
Complete this section for off-campus courses

Off-campus ZIP code: 43210

Explain differences in distribution of contact time with on-campus offerings.

Instructor: Dr. Tiffany Wild
Rank: Visiting Assistant Professor

Explain differences in instructor rank/qualifications with on-campus offerings.

Explain differences in teaching arrangements from on-campus offerings.

Explain how student services will be provided to off-campus students (registration, office hours, academic advising, etc.).

General Information

Expected Section Size: 0

State the need and purpose of the course. Indicate how the course relates to the primary goals of the academic unit/school/college/university.
This course is contracted through the School of Teaching and Learning Office of Outreach and Engagement to serve the needs of the Columbus City School Teachers.

Describe any changes in library, equipment, or teaching aids needed

Expected Enrollment for Proposed Offering Term

Please complete and attach the form(s) on the following page before completing the package.

Scheduling Supplement Form

Course Contact Information

Faculty Name: Dr. Tiffany Wild
Faculty Email: wild.13@osu.edu
Contact Name: Sarah McNeill
Contact Dept: EDUTL
Contact Email: mcneill.27@osu.edu
Contact Phone: 2-2476

Save Validate
Flex Course Request Form

College: EHE  Course Bulletin Listing: EDUTL – Education Teaching and Learning

Course Number: 812  Generic course or decimal subdivision: Y/N  Course Decimal: ________

Level: Undergraduate ___ Graduate ___ X___  Grade Option: Letter ___ X___ S/U ___  Credit

Hours: 3 ___

Proposed Effective Year: 2012  Proposed Effective Term: Winter  Previous Terms of Offering: ______

Flexibly Scheduled / Off-Campus / Workshop Course Information

Course Description 25 word limit

Participants in this course will study - by experience, reading, and discussion - instructional strategies intended to support student growth in content, skills, and disposition in mathematics. Topics include but not limited to the study of mathematical content and processes, research on K-12 curricula, teaching from an integrated procedural conceptual approach, assessing student learning, teaching with technology, and equity and diversity issues.

Course offered less than term length: N  Distribution of Class Time: 4:30 – 6:48 PM

Offering Pattern: Distance Learning Format: N (means 100% online)  Section Size: 30  Date Range: 1/3/11-1/13/11

Off-Campus Offering: Y  Off-Campus ZIP code: 43210  Off-Campus Location: TBD

Hours Out-of Class Preparation: 3 per week  Total Class Meeting Hours: 20 hours  Length of each Class: 2 hours

Advertised Course Title: Teaching Mathematics

Faculty Name: Tiffany Wild  Faculty Rank: Visiting Assistant Professor

Faculty Phone: 614-292-4783  Faculty E-mail: wild.13@osu.edu

Secondary Instructor: __________________________ Desired Access: ______

SI E-mail: __________________________

Academic Advising Opportunity: by appointment

Approve by the Graduate Studies Committee Chair: __________________________ Date: __________________________

Approved by the School Director: __________________________ Date: __________________________
EDUTL 812 Teaching Mathematics in the Elementary Schools

The Ohio State University
College of Education and Human Ecology
The School of Teaching and Learning
The Ohio State University, Main Campus
Winter 2011
Tuesday 4:30-6:48 PM

Instructor Information
Dr. Tiffany Wild
222A Ramseyer Hall
29 W. Woodruff Ave.
Columbus, Ohio 43210
(614) 292-4783
wild.13@osu.edu

Office Hours: Before and After Class and by appointment

1. Course Description/Rationale:
The Common Cores Standards and Ohio Academic Content Standards in Mathematics suggest teaching methods that begin with building mathematical confidence and competence in problem solving, reasoning, representation, communication and connections. The NCTM Principles and Standards (2000) call for increased experience and confidence in active engagement with mathematical content and processes in the elementary, intermediate and middle grades. Within such a focus, teachers can help students learn to develop and utilize a variety of creative problem solving strategies, internalize concepts with concrete, meaningful experiences, and develop understanding of mathematical concepts. To make the most of these experiences, teachers must listen to and learn about children's thinking about mathematics and thus be better able to support their students' development of mathematical thinking. By building on children's mathematical thinking, teachers can help children learn to problem solve naturally. Learning to understand and utilize student thinking and thus base instructional strategies from that understanding is a major focus of this course. Additionally, participants in this course will study - by experience, reading, and discussion - instructional strategies intended to support student growth in content, skills, and disposition in mathematics. Topics include but not limited to the study of mathematical content and processes, research on K-12 curricula, teaching from an integrated procedural conceptual approach, assessing student learning, teaching with technology, and equity and diversity issues.

2. Relationship to Other Courses/Curricula:
As is true of many other courses in the T&L MA program, this course is based on Constructivist philosophy, and expectations for participation include active engagement, contribution and internalization of the research and research based materials provided through the course. This course may serve as an elective in the T&L MA or PhD program, and is a required course in the P-6 Mathematics Specialist Endorsement.

3. Knowledge, Skills, and Dispositions: (Objectives/Student Learning Outcomes)
* Selected competencies in the P-6 Mathematics Specialist Endorsement
1.7 Are able to evaluate mathematics curricula based upon the NCTM Principles and Standards and upon the Common Core and Ohio Academic Content Standards (OAS) and use technology as an integrated part of the curriculum.

2.1 Demonstrate and apply current theories in the learning of mathematics.

2.2 Know and are able to incorporate and model developmentally appropriate practice for all students.

2.3 Know and are able to apply and model a variety of intervention strategies for meeting diverse student needs.

2.4 Respect all students and support student differences.

3.1 Use a wide range of instructional practices that promote mathematics for learners at differing stages of development.

3.2 Evaluate curriculum materials; plan and use appropriate materials, including technology-based, for effective mathematics instruction for learners at various stages of development.

3.3 Encourage reflection on, and the discussion of what is effective, what is not effective, and how to make improvements.

4.1 Critique and use a wide range of assessment tools and practices including individual and group, formal and informal, diagnostic, formative, and summative.

4.2 Use assessment information to design, implement, and revise effective instruction for all students.

4.4 Use statewide assessment tools and results to inform instruction and revise curriculum.

4.5 Identify the strengths and weaknesses of different assessment methods.

4.6 Develop student self-monitoring skills to use in their mathematics learning.

5.1 Demonstrate an understanding of research as it applies to the teaching and learning of mathematics.

5.5 Display positive dispositions to mathematics and the teaching of mathematics.

4. **Off campus Field Experiences:**
There is no field experience component of this course. All course contact time requirements will be met through the scheduled class meetings; however, completion of assignments are expected to be grounded in experience in classroom practice.

5. **Diversity:**
Curriculum/experience is designed, implemented, and evaluated in a manner that promotes the acquisition and application of knowledge, skills, and dispositions necessary to help all students learn. Lessons will include hands-on activity, group collaboration, and whole class discussion.

6. **Disability Accommodation Statement:**
Each student who qualifies with a disability is to provide the course instructor with a letter from the Disability Resource Center (DRC) stating the appropriate accommodations for this course. If you need an accommodation based on the impact of a disability, contact the instructor to arrange an appointment as soon as possible. At the appointment the course format, your needs and potential accommodations can be discussed. The Office for Disability Services provides verification of the need for accommodation and developing accommodation strategies. If you have not already contacted the Office for Disability Services and believe you will need accommodations, please contact them.

7. **Technology:**
As per ISTE Standards for Teachers, teacher participants in this course are expected to demonstrate a sound understanding of technology operations and concepts and understand their
application in teaching all students. To enhance participant learning in this course, multiple strategies and technologies will be utilized. Such strategies are expected to be models for classroom application. The used technologies will include: e-mail, internet accessing of mathematics teaching resources, Elmo, graphing calculators, and SMART technologies.

Reading/Required Texts

- **Readings.** Each student will be responsible for course readings and for providing evidence of having done this reading through input and reference in class discussions, in assigned papers and/or in references in reflective writings.

- **Required Texts**
  - Selected articles, on closed reserve, or available through the university library system.
  - Ohio Mathematics Academic Content Standards
  - Ohio Common Core Mathematic Standards

**Course Schedule**

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic(s)</th>
<th>Reading Due</th>
<th>Assignments Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 10</td>
<td>Course introduction Technology in Math education today Introduction to ORC</td>
<td>Course syllabus (in class)</td>
<td></td>
</tr>
<tr>
<td>Jan. 17</td>
<td>Problem Solving Theories and research in the field: Constructivism, content and pedagogy, Ohio Department of education Mathematics Academic Content Standard, National Council of Teachers of Mathematics Principles and Standards 2000.</td>
<td>Chapter 3 and 5</td>
<td>Quiz</td>
</tr>
<tr>
<td>Jan. 24</td>
<td>Problem-Based Classrooms and Equitability/Socio Cultural Issues in Mathematics</td>
<td>Chapters 5 and 8 Carmen Math Reading</td>
<td>Quiz</td>
</tr>
<tr>
<td>Jan. 31</td>
<td>Fractions, Decimals and Proportions – Why do we do what we do?</td>
<td>Reference chapters 16 - 19</td>
<td>Achievement Test</td>
</tr>
<tr>
<td>Feb. 7</td>
<td>Geometry</td>
<td>Chapter 21</td>
<td>Quiz</td>
</tr>
<tr>
<td>Feb. 14</td>
<td>Algebra</td>
<td>Chapter 15</td>
<td>Quiz</td>
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<tr>
<td>Feb. 21</td>
<td>Data Analysis</td>
<td>Chapter 22</td>
<td>Quiz</td>
</tr>
<tr>
<td>Feb. 28</td>
<td>Exponents, Integers, and Real Numbers</td>
<td>Chapter 24</td>
<td>Quiz</td>
</tr>
<tr>
<td>Mar. 6</td>
<td>Planning Time for Class Presentations</td>
<td>In class exploration of websites</td>
<td>Position Paper and Websites</td>
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<tr>
<td></td>
<td>Technology in Education</td>
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<td></td>
</tr>
<tr>
<td>Mar. 13</td>
<td>Class Presentations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Grading Scale**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93-100%</td>
</tr>
<tr>
<td>A-</td>
<td>90-92%</td>
</tr>
<tr>
<td>B+</td>
<td>87-89%</td>
</tr>
<tr>
<td>B</td>
<td>83-86%</td>
</tr>
<tr>
<td>B-</td>
<td>80-82%</td>
</tr>
<tr>
<td>C+</td>
<td>77-79%</td>
</tr>
<tr>
<td>C</td>
<td>73-76%</td>
</tr>
<tr>
<td>C-</td>
<td>70-72%</td>
</tr>
<tr>
<td>D+</td>
<td>67-69%</td>
</tr>
<tr>
<td>D</td>
<td>60-66%</td>
</tr>
<tr>
<td>E</td>
<td>below 60%</td>
</tr>
</tbody>
</table>

**Assignments/Point Values:**
Your EDUTL 812 grade will be based on the following point system. (See attached assignment descriptions with scoring criteria beginning on the pages noted below.)

- Professionalism (description below) 20 points
- Quizzes (description below) 50 points (5 @ 10 points each)
- Position Paper 30 points
- Achievement Tests Evaluation 30 points
- Math Web Sites (Internet Scavenger Hunt) 30 points
- Class Presentation 20 points
- Total 180 Points possible

**Assignment Descriptions**

**Notes**
- All assignments should be typed double-spaced in a readable 12-point font (e.g., Times or Times New Roman) with one-inch margins.
- “Presentation” (see scoring) refers to elements such as neatness, grammar, punctuation, spelling, general writing style, and requested format (e.g., typed and double-spaced with use of required headings/subheadings, where relevant). Clear reference must be made through citations and bibliography presented in the American Psychological Association (APA) format.
- In preparing assignments, attend carefully to all assignment information provided, including scoring information.

**Participation (20 points):**
Your participation in this class is extremely important. You are expected to attend class sessions and remaining for their entirety, be prepared for and arrive at class on time, and be courteous during and engaged in class sessions. “Participating actively” means being engaged verbally, aurally, and physically without dominating, and did not engage in side conversations, interrupt class events, and/or use cell phone/pager/email/text messaging during class session. You are
responsible for getting notes and handouts from a classmate for any class time missed. Attendance and participation benchmarks are shown below. However, all behaviors mentioned in the second sentence above will be considered in assigning points on the scale. In some cases (e.g., for an extended period of emergency absences)—at the discretion of the instructor—make-up work can positively influence earned points. You may request your current status on the following scale at any time during the course.

**Attendance/Participation Benchmarks:**
- 20 points: attended 10 or 11 full class sessions and participated actively in all classes
- 15 points: attended 9 class sessions and participated moderately actively in classes
- 10 points: attended 8 class sessions and participated moderately actively in classes
- 5 points: attended 7 class sessions and participated moderately actively in classes
- 0 points: attended 6 or fewer classes

**Quizzes (50 points):**
At the beginning of most (at least 6) class sessions, you will have 10-15 minutes to answer questions that relate to readings due that day and/or in-class material from the previous week. Responses will include “objective” items (e.g., true-false and multiple choice) and short essays requiring explanation or application of course material. Most exams will have at least three objective items worth two points each and one short essay item worth four points (ten points total). To prepare for these responses, review class notes from the previous week (lecture material from the instructor, guest speakers, classmates; videos shown; activities conducted) and study course readings due that day. The sum of your best four scores will constitute your total quiz grade (50 points possible). Missed quizzes may not be made up (i.e., a grade of 0 will be earned)—this includes all reasons, such as class absences and late arrivals.

**Position Paper (30 points):**
The purpose of this assignment is to develop a valid position concerning the use of technology in mathematics education. Here’s what you have to do:

1. Go to the NCTM’s website [http://www.nctm.org](http://www.nctm.org)
2. Find NCTM’s position statement regarding technology.
3. Read this statement.
4. Reflect on this statement based on your own experiences and beliefs with regard to the use of technology in teaching and learning of mathematics.
5. Write your position paper. The paper should be approximately 2-3 pages typewritten, double-spaced, and should contain at least 3 references. One of the references must come from a printed scholarly journal.

**Scoring**

**Completeness (6 points):** inclusion of required references; evidence of reading position statement.

**Quality (12 points):** assessment of how substantial, thoughtful, and relevant your position paper is.

**Theoretical base (10 points):** position paper should be grounded in current theory/literature, as discussed in class, your textbook, and the *Standards.*
Presentation (2 points): This includes neatness, grammar, punctuation, spelling, and general writing style. Paper should be 2-3 pages typewritten and double-spaced.

Grade level Achievement Tests Evaluation (30 points):
For this assignment, you will go to the Ohio Department of Education Website (http://www.ode.state.oh.us). Find the link “Testing.” Click on the link “Released Test Materials.” Then select “Released Test Materials for Ohio’s Achievement Tests.”

1. Find a copy of Ohio’s Grade level Achievement Tests in Mathematics (Select only one grade level of your choice).
2. Read the entire exam and select 6 questions that you find of particular interest.
3. Solve 5 of these questions.
4. Pick one of the questions you solved that you think is a good, fair, and equitable question and explain why you think it is a good question.
5. Pick one of the questions you solved that you think is a poor question based upon equity, and explain why you think it is a poor question.
6. Rewrite the question in part 5 so that it is a better question and explain why it is better OR write an entirely different question that assesses the same objective that the question in part 5 was trying to assess and explain why this new question is a good one. Your explanation must include a statement about equity and diversity.

Scoring
Completeness (6 points): inclusion of 6 questions of particular interest.
Question Evaluation (10 points): tell which question is good and which is poor; provide explanations for each one.
Theoretical base (12 points): revision (rewriting) of question to improve it; explaining why it is better with a statement about diversity and equity
Presentation (2 points): This includes neatness, grammar, punctuation, spelling, and general writing style.

Math Web Sites Paper (30 points):
These activities are designed to help you find some of the resources available to mathematics teachers online. You will search the Web and do the following:

1. Find a lesson plan created by a teacher.
   a. Copy the title of the lesson and the name of the author.
   b. Briefly describe the procedures of the lesson being presented.
2. Find a lesson plan that was created by an expert or association.
   a. Copy the title of the lesson and the name of the author.
   b. Briefly describe the procedures of the lesson being presented.
   c. Explain the difficulties your students might encounter in solving this problem.
   d. Explain how you might minimize these difficulties.
3. Find something of interest to you at any math related websites.
   a. Copy the web address of the site.
   b. Explain the nature of the component of the website that you like.
c. Explain how this site would be useful in some aspect of mathematics education.

**Helpful website address:**
http://www.lessonplanspage.com/Math.htm
http://mathforum.org/dr.math
http://mathforum.org/sum95/suzanne/tess.intro.html
http://www.PROMYS.org/competitions.html
http://www.learner.org/exhibits/dailymath
http://web.mit.edu/hmmt/www/algebra_samples.html
http://mathforum.org/te/high/hlhm
http://www.ode.state.oh.us
http://my.nctm.org/eresources/school_level.asp?lv=3
http://my.nctm.org/eresources/school_level.asp?lv=2
http://www.worldofnumbers.com/index.html
http://www.supermathhtutor.com
http://www.math.niu.edu/~zollman/links.html

**Class Presentation (20 points):**
This assignment involves choosing a good mathematics activity – that is or is not already familiar to you – to share with the class. You will have some input into the topic that you will present. Although the activity may be for any grade level(s) of your choice, be sure it is one you find particularly good (effective, engaging ...) and also “accessible” to individuals enrolled in this class. The activity should have a conceptual rather than procedural/abstract (i.e., “thinking” rather than rote) orientation. The main concept explored should fit any topic (e.g., symmetry), and the activity should clearly lend itself to furthering or reinforcing understanding of some aspect of mathematical concepts.

Choose one activity that fits within any topic listed below. The activity should come from a source other than the textbook for this course. It should be a brief activity that fits within a lesson (i.e., it is not in itself a lesson). It might be an activity that would take, say, 10-30 minutes to conduct in the classroom; you might be able to conduct it in its entirety in class or only part of it, in which case you will need to be sure classmates understand how the full activity is carried out. The time allotment for this presentation is 20-30 minutes, during which you should:

- Give a very brief overview of the topic and activity (e.g., the objective).
- Engage the class in part or all of the activity in the same manner as K-12 students would experience it (you may rearrange students/the classroom as needed).
- Allow about 5 minutes for the class to critique the activity (i.e., to tell what they do and do not like about the activity and why, and to suggest changes/adaptations). [Feedback provided during this time will not be considered in determining your grade.]
- Provide a handout explaining the activity (at some point during your presentation). You may prepare a single-spaced handout or photocopy it from a resource book. Be sure the handout fully explains the activity and includes the topic, specific objective, appropriate grade level(s), list of materials needed, and reference information indicating the activity’s source (add these, as needed, to a photocopied activity). The handout might also include, for example good questions to pose or assessment information.

**Additional Notes**
You will be assigned, after listing rank-ordered preferences (preferred choices cannot be guaranteed), one of the following topics for which to prepare an appropriate activity for listed presentation dates provided in the table above:

a. Problem solving/reasoning
b. Problem solving/reasoning
c. Number sense/concepts [includes counting, even-odd, more/same/less, etc.]
d. Whole-number operations
e. Number System [includes base-ten concepts]
f. Decimal and Percent concepts
g. Fractions
h. Geometry/spatial sense
i. Measurement
j. Algebraic reasoning [includes patterns]
k. Data analysis/probability

2. Notify me of the general nature of your activity at least two days before your presentation.

3. Bring all materials needed to conduct your activity. Check with the Education Curriculum Center to see if they can provide desired manipulative materials (e.g., pattern blocks or Unifix cubes).

4. If you project any printed information using available classroom technology, use at least one font size larger than the print size you use for papers – usually at least 14 (preferably larger), leave much white space around writing, and minimize verbiage (e.g., use bulleted notes).

**Scoring**

**Activity (6 points):** quality and appropriateness of activity as described above.

**Method of presentation (10 points):** method in which the activity was presented/conducted; includes organizational skill in preparing materials, arranging students and/or physical space as needed, etc., thoroughness in helping the class understand the activity in its entirety, and soliciting feedback from classmates as described above.

**Pacing (2 points):** appropriateness of time spent on session components; transitions (should be meaningful and efficient); overall time of session (minimum 20, maximum 30 minutes).

**Class handout (2 points):** handout as described above, as well as handout appearance and grammatical accuracy.

**Policy on Late Assignments:**
Assignments are due at their scheduled time even if you are absent from class, with the exception of verifiable emergencies, for which assignments are due the next possible weekday. Late papers will only be accepted if an emergency occurs.

**Academic Misconduct** – The Ohio State University’s *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: “Any activity that tends to compromise the academic integrity of the University, or subvert the educational process.” Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University’s *Code of Student Conduct* is never considered an “excuse” for academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University’s *Code of Student Conduct* (i.e., committed
academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University. For additional information, see the Code of Student Conduct. http://studentaffairs.osu.edu/resource_csc.asp

**ODS Statement** -- Any student who feels s/he may need an accommodation based on the impact of a disability should contact one of the instructors privately to discuss specific needs. The Office of Disability Services is relied upon for assistance in verifying the need for accommodations and developing accommodation strategies. Please contact the Office for Disability Services at 614-292-3307 (V) or 614-292-0901 (TDD) in room 150 Pomerene Hall to coordinate reasonable accommodations; http://www.ods.ohio-state.edu/. Please make sure that students know they will be expected to follow Americans with Disabilities Act Guidelines for access to technology.

**Grievances and Solving Problems** -- (Example statement) According to University Policies, available from the Division of Student Affairs, if you have a problem with this class, “You should seek to resolve a grievance concerning a grade or academic practice by speaking first with the instructor or professor.” Then, if necessary, with the department chairperson, college dean, and provost, in that order. Specific procedures are outlined in Faculty Rule 3335-7-23, which is available from the Office of Student Life, 208 Ohio Union.” “Grievances against graduate, research, and teaching assistants should be submitted first to the supervising instructor, then to the chairperson of the assistant’s department.”

**Statement on Diversity** -- The College of Education and Human Ecology affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited.

**Extra Credit:** This course does not include an option for earning extra-credit points.

**Note:** This document represents the instructor’s best attempt to delineate the contents of this course. It is subject to reasonable adjustments, including clarifications and additions based on the instructor’s professional judgment and needs of the students in the course.

**Additional Resources**


