SPE 442

REMEDIATION OF DIFFICULTIES IN UNDERSTANDING AND

APPLYING MATHEMATICS (.5)

**Course Description**: An advanced study of the theories, methods, and materials used to teach mathematics with a focus on evaluating, planning, and organizing multi-sensory instruction for students having difficulties with mathematics.

**Elmhurst College Integrated Curriculum:** This course meets the Quantitative Reasoning tag for the following objective: Students will enhance their ability tointerpret mathematical models such as formulas, graphs, tables and schematics and draw conclusions from them.

**Course prerequisites:** SPE 300; MTH 325

**This course requires field experiences**.  You must provide a copy of your criminal background check (CBC) to hosting schools.  Before beginning or continuing in any field experiences, you must disclose to the building administrator if there is an arrest on your CBC or if there has been any change in the status of your CBC (a subsequent arrest or pending court ruling).

**Required Text:** Tucker, B., Singleton, A., & Weaver, T. (2002). *Teaching mathematics to all children* (2nd ed.). Columbus, OH: Merrill-Prentice Hall. (Available at the campus bookstore)

**TEACHER EDUCATION Goals & Outcomes** (Aligned with *2013* Illinois Professional Teaching Standards)

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| **Teacher Education Goals** | **Teacher Candidate Outcomes** | | |
| #1: Integrate content knowledge across disciplines and construct pedagogical content knowledge to provide culturally relevant instruction that prepares all students for the literacies needed in a changing and interdependent world. | 1A: subject area content knowledge in planning, instructional delivery, and assessment.  (IPTS 2 & 5) | 1B: culturally relevant pedagogical content knowledge in planning, instructional delivery, and assessment. (IPTS 2 & 5) | 1C: best practices in literacy so all students can acquire subject area content knowledge.  (IPTS 6) |
| #2: Apply differentiation, evidence-based practices and assessments, and innovative technologies to meet the characteristics and needs of all students. | 2A:  differentiation and evidence-based practices to address the diverse characteristics and needs of all learners (IPTS 1 & 3) | 2B: developmentally-appropriate teaching strategies and innovative technologies that encourage critical thinking and problem solving. (IPTS 5) | 2C:  a variety of assessments to identify and evaluate learning targets by analyzing data to make instructional decisions. (IPTS 7) |
| #3: Provide safe, caring classroom environments that demonstrate and encourage creative, engaged learning to become lifelong learners, critical thinkers, and responsible citizens. | 3A: effective communication, organization, and behavior management strategies to support a safe and healthy learning environment.  (IPTS 4) | 3B: strategies to successfully engage all students in purposeful learning.  (IPTS 4) |  |
| #4: Collaborate with students, families, colleagues, and community members to create learning communities that value diversity. | 4A: engage families while creating learning experiences that value diverse student needs. (IPTS 8) | 4B: collaborate with colleagues to create and sustain supportive learning environments. (IPTS 8) | 4C: use community resources to expand learning opportunities. (IPTS 8) |
| #5: Act as reflective and ethical professionals who are committed to schools and the profession. | 5A: reflective practices that directly contribute to student learning and development.  (IPTS 8) | 5B: advocate for students and their families. (IPTS 9) | 5C: demonstrate leadership as part of their ethical responsibility to their colleagues and the profession. (IPTS 9) |

**Course Outcomes** (Aligned with Teacher Education goals, *2013* Illinois Professional Teaching Standards, Standards for the Learning Behavior Specialist 1 and Common Core Standards for All Special Education Teachers)

Department Goal #1: Integrate content knowledge across disciplines and construct pedagogical content knowledge to provide culturally relevant instruction that prepares all students for the literacies needed in a changing and interdependent world.

1. Know how to access the tools and knowledge related to latest findings and technologies in the discipline (IPTS2F) LBS3A
2. Evaluate teaching resources and materials for appropriateness as related to curricular content and each student’s needs (IPTS 2I) LBS4ANOP, CC4CVZ
3. Facilitate learning experiences that make connections to other content areas and to life experiences (IPTS 2N) LBS4ANOP, CC4Z

Department Goal #2: Apply differentiation, evidence-based practices and assessments, and innovative technologies to meet the characteristics and needs of all students.

4. Understand when and how to modify instruction based on outcome data as well as student needs, goals and responses (IPTS 3D, 5H) LBS4ANOP, CC3HMN, CC6A

5. Understand the spectrum of student diversity and the assets that each student brings to learning across the curriculum (IPTS 1A) LBS3A

6. Understand how research and data guide instructional planning, delivery, and adaptation (IPTS 3G) LBS3A, LBS4N, CC3Q

7. Understand how teaching and student learning are influenced by development, past experiences, talents, prior knowledge, economic circumstances and diversity within the community (IPTS 1C) LBS4AN CC3H

Department Goal #3: Provide safe, caring classroom environments that demonstrate and encourage creative, engaged learning to become lifelong learners, critical thinkers, and responsible citizens.

8. Organize, allocate, and manage time, materials, technology, and physical space to provide active and equitable engagement of students in productive learning activities (IPTS 4M) LBS4ANOP, CC6M

9. Engage students in and monitor individual and group-learning activities that help them develop the motivation to learn (IPTS 4N) LBS4ANOP, CC4Z, CC6AM

Department Goal #4: Collaborate with students, families, colleagues, and community members to create learning communities that value diversity.

10. Recognize the effective strategies for involving parents/guardians and collaborating with families in student development and learning (IPTS 8D) LBS4N

11. Understand how to co-plan with other classroom teachers, parents or guardians, paraprofessionals, school specialists, and community representatives to design learning experiences (IPTS 3F) LBS4N, LBS9B, CC7Q

12. Collaborate with school personnel in the implementation of appropriate assessment and instruction for designated students (IPTS 8O) LBS4N, LBS9B, CC7Q

Department Goal #5: Act as reflective and ethical professionals who are committed to schools and the profession.

13. Analyze use of best practices and research-based materials in school contexts. (IPTS 9A) LBS4ANOP, LBS9AB, CC3H, CC4Z, CC6AM

**College and Department Policies**

The College will make reasonable accommodations for persons with documented disabilities. If you have a disability that may have some impact on your work in this course, please contact Maureen Connolly in the Learning Center. Additional inquiries may be directed to the Vice President for Academic Affairs and the Dean of the Faculty, or to the Chicago Office of the Office of Civil Rights, United States Department of Education. Once the College has documented the disability, you will be directed to initiate and maintain communication with your professor regarding your needs.

*Incomplete* (“I”) grades must be requested in writing by the final class meeting, if you cannot complete the term for emergency reasons. Forms are available from your professor. Completion of field experiences is not considered an emergency. Incompletes must be resolved within three weeks of the end of the term. Late assignments at the time of a request for an *Incomplete* will incur any late penalty. Students in teacher education programs may not continue in education courses with an *Incomplete* pending.

Academic integrity and dishonesty are clearly defined in the *E-Book*, as are the professor’s responsibilities and options should academic dishonesty occur. Department of Education Policy states that the minimum penalty for academic dishonesty is an “F” on the assignment.

College Policy requires all teacher candidates to self-disclose a criminal history or any pending court hearing to building administrators prior to beginning or continuing field experiences. Candidates may **not** observe or participate in field experiences until the administrator has given approval and the approval has been confirmed by the program director. The policy is provided in the *Guide to Policies and Procedures for Undergraduate and Certification Teacher Education Programs*. Violation of this policy will result in a recommendation for dismissal from the teacher education program.

Attendance is expected and written documentation is required to make-up a course examination as defined in the *College Catalog*. Completing field experiences is not a valid reason for being tardy to or absent from class.

# **Department of Education Professional Conduct Guidelines**

Aligned with Illinois Professional Teaching Standard *Professionalism, Leadership, and Advocacy* (9H, 9I, 9J, 9O, 9P, 9Q, 9R, 9S, 9T)

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| **RESPONSIBILITY:** | **Demonstrates timeliness in course attendance and responsibilities**. Attend class, be on time, and stay for the duration of class.  **Follows syllabus guidelines.** Complete assignments on time, which is the beginning of class on a due date. Assignments are late if class is not attended or if there are technical problems. Work may not be faxed or e-mailed to the professor without prior approval.  **Communicates questions and concerns to the instructor.** Communicate in a timely and appropriate manner**.** Use instructor office hours or make an appointment to ask individual questions or discuss progress. |
| **ETHICS** | **Practices academic integrity and honesty**.Assignments often involve collaboration and the use of multiple resources. Clearly cite ideas from other sources and acknowledge the assistance of others. Portions of assignments used for credit in different courses must be pre-approved by both professors and should be referenced clearly for dual credit on the cover page.  **Submits accurate accounts of field experiences** and have them verified by a licensed supervising professional.  **Maintains confidentiality** in all field reports and discussions of fieldwork. Fabrication of field hours, experiences, or signatures or failure to notify the College or schools of your criminal background check status are violations of the College’s *Academic Integrity Policy.* |
| **ATTITUDE** | **Participates regularly and positively.** Active participation is expected during every class meeting. Electronic devices should not interrupt class or distract others. Set cell phones to vibrate or turn them off. Electronic tools are to be used for coursework or activities directly related to the class -- not used for entertainment, personal communications, or other coursework during class meetings or in field settings.  **Respectful of other’s contributions and demonstrates appreciation of diversity and new ideas.** Valuing of diverse ideas and beliefs is expected through courteous debate and dialogue as well as in respectful written evaluation and analysis.  **Responds positively to feedback.** Accept feedback from instructor, mentor teachers, and peers in a positive receptive manner. Use feedback from instructors and mentor teachers in course activities, course assignments, and field experience activities to improve coursework, teaching practices, and professional dispositions. |
| **COLLEGIALITY** | **Made equitable contributions to group efforts.** Give your maximum efforts in promoting equitable group work and completing field experiences. Maintain commitments to classmates and professionals in the field.  **Collaborates with peers and school staff members and mentor teachers in a professional manner.**  Take initiative in the field. Volunteer your time and share professional resources and responsibilities. Show appreciation for the time and efforts of others. |
| **HONOR** | **Communicates high regard for the profession, educators, students, and parents.** Professional demeanor (e.g., conduct and attire) is expected in school settings. Honor the commitments of hosting professionals by providing details of all course assignments at the beginning of the term.  **Viewed course assignments as opportunities to enhance content area knowledge and skills.** Demonstrate professionalism in formal class presentations. All written work must be word-processed and edited prior to submission. Use APA style. |

**Field Experience Requirements**

Each education course requires field experiences. Professional education courses are designed to provide a minimum of 15 hours of fieldwork per 1.0 course unit (a minimum of 8 hours in a .5 course). For example, teacher candidates completing 2 education courses in one term should plan to spend approximately 30-35 hours in the field during the term with approximately 15-18 hours recorded on the Field Experience Verification (FEVs) forms for each course. These course-based field hour requirements will be increased in practicum courses (e.g., EDU 121, EDU 421, EDU 445, ECE/EED/SEC/SPE 200, 300, 450, etc.).

Review the Guide to Field Experiences at <http://public.elmhurst.edu/education/1281647.html>.

Field experiences may not represent a professional conflict of interest. Teacher candidates may **not** document field experiences completed in the school district in which they reside or at schools they attended on their field experience spreadsheets. Field experiences documented on the spreadsheet may not reflect any professional conflicts of interest (see *Polices & Procedures* for a definition of “conflict of interest”). Courses in which the instructor requires a specific placement location are the only exception to this requirement.

**Minimum hour requirements.** Field experience spreadsheets are used to document the minimum of 100 hours for admission to student teaching. Of these 100 hours, 80 hours must be participation and 40 hours must be in diverse settings. A maximum of 10 field experience hours in private school settings may be counted toward the 100 hours if they are completed with a licensed teacher. Some licensure programs allow teacher candidates to student teach in private settings (e.g., preschools, special education residential settings), so more hours may be accepted for field work in some private settings because they can serve as potential student teaching placements. Candidates should consult with their program directors if they have questions.

**Teacher candidates that are completing the ESL endorsement will need to document the 100 hours required for that endorsement on a separate field experience spreadsheet – titled FIELD EXPERIENCE SPREADSHEET FOR ESL ENDORSEMENT. This additional spreadsheet will need to be turned in to the Department Chairperson before ESL endorsement will be issued by the Licensure Officer.**

Field Experience Reminder: Bensenville #2, Berkeley #87, and Schaumburg #54 do not accept students for any field placements for observation. Elmhurst #205 does not allow more than 15 hours of observation – these hours must be arranged through the Department of Education Satellite Program.

**Department-wide Grading Scale language**.   
All grading will be completed as objectively as possible. Different sections of this course have common assessments (e.g., rubrics, test specification tables) and use the same number of possible points.

"A" 92-100%   
"B" 84-91%   
"C" 76-83%   
"D" 68-75%

Grades below C (2.0) will not fulfill the Department of Education's requirements for licensure or major in Education. The Department of Education does not use +/- grading.

**LATE ASSIGNMENT POLICY**

The maximum point value of a late assignment is the course equivalent of a C+. Late assignments will not be accepted after the last class meeting unless an official ***Incomplete*** has been signed by the professor. The maximum value for all late assignments at the time that an ***Incomplete*** is requested will be equivalent to a C+ on that course assignment.

**Blackboard**™ **Page & E-mail Communications**

All course assignments, course-related links, documents, the course bibliography, assignment materials, individual grade updates, last minute schedule changes (“announcements”), and so forth may be found by accessing the course’s electronic Blackboard™. **Professor e-mails will be sent via Blackboard and** **students should check the page prior to each class meeting.** All communications are sent via Blackboard to students’ College e-mail accounts.

**Course Assignments**

*Evaluation rubrics for major assignments are posted on Blackboard*

## **Active Participation 15 points**

Students will receive points for actively participating during class sessions. This includes: sharing during whole class and small group discussions, collaborating during group work, asking questions in class, using electronic equipment (cell phones, laptops, etc.) appropriately during class, and engaging in the hands-on activities. 15 points = active participation each class session; 10 points = active participation during most class sessions; 5 points = improvement needed in active participation

**Probe Intervention Project-**50 points (Objectives: 1, 2, 4-6, 8, 9, 11, 13) (IPTS 1A, 2FI, 3FDG, 4MN, 5H, 9A)

*Program Assessment*

For Placement in Resource Setting:You will develop a long-term lesson plan that can be broken down into 5 tutoring sessions. You and your mentor teacher should identify a learner who is having difficulty in math and decide on the math concept in which to concentrate for the 5 lessons. You will create a probe with 10-12 problems on it. Make 8 copies and vary the placement of the problems on the page for each copy. Administer the probe twice (baseline) before you begin your lessons and plan an intervention based on the results, setting a goal for the final probe. You will also give a probe after each lesson. Plot the results of all of the probes on a graph and create a journal noting your reflections of the lessons. Keep copies of each probe and work samples from the learner. \*Remember to turn in an FEV form signed by the teacher for the hours spent on this project only.

The assignment will be graded based upon the following:

* Pre-planning section:
  + What does your learner know, what can s/he do, and what is s/he still learning to do?
  + What does the focus learner need to learn to make progress toward the goal?
  + What instructional strategies and learning tasks will you design to support the learner’s access to the curriculum?
  + How will you monitor and record the learner’s progress toward each lesson’s objectives?
  + How are your plans informed by your knowledge of your focus learner?
* A long-term lesson plan and a plan for each session that should include the following:
  + Common Core State Standards for Mathematics for math concept(s)
  + lesson objective(s) with measurable criteria
  + lesson plans should be detailed enough that another teacher could use them
  + list of assessment tools and data collection procedures to monitor progress toward the lesson objective(s)
  + instructional strategies and learning tasks, including any modifications or accommodations to meet the learner’s needs
  + list of resources and materials, including any modifications or accommodations for the learner
  + Academic Language-terms and definitions; how you will introduce and reinforce the terms and how the learner will demonstrate understanding of the terms
* A journal entry for each lesson that includes responses to the following:
  + Describe how the learner did or did not meet the lesson objective.
  + What were the strengths of the learner? What were the weak areas of the learner? Include any patterns of errors or misconceptions exhibited by the learner.
  + How will you plan for the next lesson based on the outcome of this lesson and the probe results?
  + What did you discuss with the mentor teacher before, during or after this lesson?
  + A graph of the results of all probes with a one to two-page explanation of the results of the probes (ex-why you think the student scored the way he/she did on each probe) and how the results helped you plan each subsequent lesson
* Spelling, mechanics, grammar and neatness of project

**Lesson Analysis Project-**50 points (Objectives: 1, 2, 4-9, 11-13) (IPTS 1AC, 2FI, 3DFG, 4MN, 5H, 8O, 9A)

For Placement in Self-Contained Setting:You will collaborate with your teacher to plan a whole class lesson that includes a formative assessment so you can provide evidence of student learning. Discuss your plan for instruction and assessment with your teacher. Include the highlights of your discussion and include the following in your paper:

* Context for learning:
  + age of students in setting
  + schedule for instructional time in mathematics with this group of learners
  + primary language of instruction, if other than English (e.g., ASL)
  + description of any district, school, or mentor teacher requirements or expectations that might affect your planning or instructional delivery (e.g., prescribed math curriculum).
  + the textbook or instructional program you primarily use for instruction. If a textbook, please provide the title, publisher, and date of publication.
  + description of the size and composition of the group including needs of learners according to IEP
* Pre-planning:
  + What do the learners already know and are able to do regarding the math concept?
  + What do you want the learners to think, know, understand and be able to **do** (identify, compare, use, design, judge, etc.). Be specific and use concrete terms.
  + How will the learners demonstrate this? Describe observable actions.
* A lesson plan that should include the following:
  + Common Core State Standards for Mathematics for math concept(s)
  + lesson objective(s) with measurable criteria
  + lesson plans should be detailed enough that another teacher could understand them
  + list of assessment tools and data collection procedures to monitor progress toward the lesson objective(s)
  + instructional strategies and learning tasks, including any modifications or accommodations to meet the learners’ needs
  + list of resources and materials, including any modifications or accommodations for the learners
  + Academic Language-terms and definitions; how you will introduce and reinforce the terms and how the learner will demonstrate understanding of the terms

Collect evidence of student learning and using numbers or initials in place of students’ names, make a chart or spreadsheet to record the results of your assessment. Then create an analysis in narrative form of your teaching based on the following questions:

* Was the lesson taught as planned? Describe any changes you made in the assessment, strategies, and/or learning tasks from what was described in the lesson plan and explain why changes were made.
* If you could teach the lesson to the same learners, what 2 or 3 things would you do differently to improve their learning and why do you expect each of these changes to make a difference in their learning? What other forms of assessment could you have used? Why?
* To what extent did the whole class learn what you intended them to learn? What type of feedback did you provide?
* What have you learned about yourself as a teacher? What goals do you have for yourself as you plan future lessons?

For this assignment turn in: your Context for Learning and Pre-planning responses in narrative form; the lesson plan with required components; spreadsheet or chart with student assessment results; blank copy of the assessment and any other handouts or activities you used, and the analysis in narrative form. \*Remember to turn in an FEV form signed by the teacher for the hours spent on this project only.

**Website-**20 points (Objectives: 1- 3, 10) (IPTS 2FIN, 8D)

You will develop a website suitable for students and parents to utilize that will include research-based mathematics intervention strategies. On your website you will include appropriate manipulatives or hands-on materials, a list of activities and strategies for parents/students to use to reinforce math skills; resources such as websites, materials, and books for parents/students to use to update and educate themselves about mathematic concepts; some of these resources and activities should include connections to other content areas. Instruction on how to make the website will be given during a session at the library.

**Content Quizzes-**20 points (Objectives: 2, 3, 7, 10, 13) (IPTS 1C, 8D, 9A)

You will use Blackboard to take 2 quizzes on the content covered in this course. Each quiz will be worth a maximum of 10 points.

**Presentation on Intervention Strategies-**25 points (Objectives: 1, 2, 8, 13) (IPTS 2IF, 4M, 9A)

You will do a 15 minute presentation on at least two research-based strategies that you used/were used by your mentor teacher during this semester that were most effective for teaching math concepts and skills to learners with exceptionalities. Guidelines will be provided during class. The presentations will be done during finals week.

**TENTATIVE COURSE SCHEDULE**

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| **Date** | **Chapter/Topic/Assignments Due** | **To Do this week** |
| 8/26 | Ch. 1-Instruction; Ch. 2-Diversity; strategic tutoring | Read Ch. 3 |
| 9/9 | Ch. 3-Lesson planning; data analysis/assessment | Read Ch. 4 |
| 9/16 | Ch. 4-Early number concepts | Read Ch. 5 |
| 9/23 | Ch. 5-Whole Numbers/Numeration/ Problem Solving | Read Ch. 6 |
| 9/30 | Ch. 6-Adding & Subtracting | Decide on topic for website |
| 10/7 | Library for website instruction; **Quiz 1 due** | Read Ch. 7 |
| 10/21 | Ch. 7-Multiply & Dividing | Read Ch. 8 |
| 10/28 | Ch. 8 Fractions | Read Ch. 9 |
| 11/4 | Ch. 9-Decimals/Percents**; Probe Intervention or Lesson Analysis Project due** | Read article |
| 11/11 | Algebra & algebraic thinking | Read Ch. 10 |
| 11/18 | Ch. 10-Measurement; **Website due** | Read Ch. 11 |
| 11/25 | Ch. 11-Geometry; **Quiz 2 due** | Read Ch. 12 |
| 12/2 | Ch. 12-Data Analysis & Probability; **Probe Intervention or Lesson Analysis Project due** | Prepare final presentation |
| 12/11 | **Final Presentation**s |  |