I. Course Description

This course is designed to strengthen students to knowledge of methods for teaching all children in developmentally appropriate topics in PreK through elementary mathematics and science, as outlined by NCTM’s Principles to Action, Next Generation Science Standards, and CEC. Emphasis is placed on involvement in an afterschool mathematics tutoring program for 2nd grade students, anticipation of students mathematical thinking, implementation of research based science and mathematics teaching practices in high needs schools.

II. Student Outcomes

This course is designed to enable students to:

<table>
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<tr>
<th>Student Learning Outcomes</th>
<th>PDE PreK-4 Program Guidelines</th>
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<tr>
<td>1. Describe, discuss and reflect upon mathematics interventions in grades PreK-6</td>
<td>V.A-C, P-T</td>
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<td>2. Listen to, analyze, interpret, and anticipate children’s’ mathematical or scientific thinking and use this information to plan instruction</td>
<td>I.A.1-2, 6-7</td>
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<td>3. Identify and use selected manipulatives and technology such as counters, base ten models, fraction circles, Tangrams, color tiles, calculators, Osmo and Internet resources to teach appropriate mathematics or science content topics in grades PreK-6.</td>
<td>I.G.1-3,6, II.C.1.j, II.C.2.d, II.C.2.g</td>
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<td>4. Identify and use various instructional strategies and techniques (cooperative and peer group learning, activity centers, laboratories and workshops, teacher-directed presentations, technology supported learning) to teach mathematics and science content topics appropriate for the elementary and middle grades to all children including those from non-mainstreamed populations.</td>
<td>I.A.7, V.P, V.S, V.T</td>
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5. Identify and describe alternative methods for assessing students’ work, such as using diagnostic interviews, etc.

III. Nature of Course Delivery

This course will continue an inquiry into mathematics and science teaching that will guide you in your first teaching job. You will acquire tools that will enable you to continue to inquire and learn as part of your work as a teacher. Class sessions will be in different formats, that meet weekly. We will have one-on-one meetings, collaborative meetings with PSTs, and meetings in public schools.

Throughout the course, you will engage in elementary mathematics teaching and learning in several ways:

1. Participating in a common practice: Our class activities, discussions, and interactions offer us opportunities to study the practice of teaching. You will experience the content of elementary mathematics and science as a learner. You will take steps to understand and deepen your own mathematical and scientific understanding as well as that of your colleagues.

2. Engage in anticipating, interpreting, and assessing elementary students’ mathematical thinking through the study of real classroom practice. You will observe, read about, and discuss classroom instructional episodes for the purposes of identifying and understanding elementary students’ mathematical thinking.

3. Actively practice ideas discussed in the readings and in class by engaging in mathematical and scientific tasks, observing and analyzing examples of teaching, making connections among mathematics topics at various levels, and leading mathematical discussions.

4. Further explore and practice these ideas with PSTs and elementary students.

IV. Texts and Readings

Required

Text:

Web-based Resources:

You Cubed:
https://www.youcubed.org

NCTM Principles to Action Executive Summary:
https://www.nctm.org/uploadedFiles/Standards_and_Positions/PtAExecutiveSummary.pdf

Pennsylvania Department of Education Mathematics Core Standards:
http://static.pdesas.org/content/documents/PA%20Core%20Standards%20Mathematics%20PreK-12%20March%202014.pdf
Next Generation Science Standards:
http://www.nextgenscience.org

Course Google Doc:
https://docs.google.com/document/d/1FPiF9ztXiDNzVWRFsftGUxd1P4Pjp2p4zzFu9Ya8eiI/edit?usp=sharing

Journal:
1. Teaching Children Mathematics- This NCTM publication is available in hard copy in the library or online through our library’s digital journal subscription. If you have trouble accessing either of these please contact a librarian and they can help.
2. Teaching Exceptional Children- This CEC publication is available in hard copy in the library or online through our library’s digital journal subscription. If you have trouble accessing either of these please contact a librarian and they can help.

V. Course Requirements, Assignments, & Evaluation Criteria

The assignments across the semester are intended to further your understandings of what it means to teach, learn, and assess using mathematics and science interventions. The assignments are designed to focus your attention on students’ understanding and thinking about mathematics and science, and how to use that knowledge to plan effective mathematics instruction. All assignments are to be turned in to your instructor on time.

Grading Policies
- Assignments are due on the date listed on D2L.
- LATE ASSIGNMENTS: Late work will not be accepted for full credit, 10% will be deducted for each day the assignment is late.
- All written and typed assignments are to be clear and coherent.
- Typed assignments are to be double spaced with 12 point times new roman font.
- Unless specified otherwise, all out of class assignments should be submitted through D2L.

Assignments

**Contract Grading Options**

This semester we will be using a contract grading system, meaning that you are able to tailor the assignments in this course to meet your personal learning preferences. You will have the option to select how you will be evaluated on the course topics throughout the semester. The exception being everyone is **required** to complete the **book study**, participate in a **STEAM practicum**, and complete the **ECE/SED Block Presentation**.

Below is the list of possible assignments that can be completed to demonstrate your mastery of the topics covered. You need to **initial** the line corresponding to the activity you are going to complete. The “student choice” option is available for certain topics. By selecting this option, you are agreeing to develop an appropriate assignment that will allow you to demonstrate your mastery of the topic. **The instructor must approve the assignment you develop 1 week before the due date.**
Once you have made your selections, you will sign and date the bottom of the form and submit it to me. My signature indicates that we have both accepted this contract and use these assignments to calculate your final grade for the course. This is your opportunity to design the course in a way that you believe will be most beneficial to you. I strongly encourage you to consider all the options before making your selections.

**Book Study (45 pts)**  
Weekly online posts with connections to your classroom teaching  
*Required*

**ECE/SED Block Presentation (10 pts)**  
Collaborative Presentation to ECE/SED block students on course “take aways”  
*Required*

**STEAM Practicum (5 pts)**  
Co-teach at least one STEAM lesson with STEAM Teacher  
*Required*

**STEAM Practicum Reflection (10 pts)**  
2 Page Reflection Paper  
Student choice

**Science and Mathematics Interventions (30 pts)**  
Must pick 2

- URAC Presentation
- Creation of Math Club/Night Materials
- Creation of classroom based science interventions
- Creation of classroom based mathematics interventions
- Book Review of Science or Math Intervention Focused Book
- Student choice

**Course Total = 100 pts**

Student's Printed Name: ____________________________________________

Student’s Signature: ________________________________
Date: _____________

Professor’s Signature: ____________________________________________
Date: _____________

*Evaluation Schema*

Determination of the Final Grade:
- A  93%-100%
- A-  90%-92.99%
- B+  87%-89.99%
- B   83%-86.99%
- B-  80%-82.00%
- C+  77%-79.99%
C  73%-76.99%
C-  70%-72.99%
D   60 – 69%
F   Below 59%

VI. Attendance Policy
Attend all sessions. If you will be absent please contact the professor prior to your absence.

VII. Academic Integrity Statement
The standards of academic integrity as stated in the Student Handbook will be strictly enforced.

VIII. Social Justice
Westminster College is committed to social justice. I concur with that commitment and expect to maintain a positive learning environment based upon open communication, mutual respect, and non-discrimination. Our College does not discriminate on the basis of race, sex, age, disability, veterans status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration. If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Disability Resources. It is the responsibility of the student to notify the faculty member at the beginning of the school term.

Note: The course requirements are subject to revision at the discretion of the instructor. Revisions will be announced via email and/or in class.