

Tompkins Cortland Community College
Master Course Syllabus

Course Discipline and Number: MATH 115
Course Title: Mathematics for Elementary School Teachers II

Year: 2021-2022
Credit Hours: 3

Attendance Policy: *To maintain good grades, regular attendance in class is necessary. Absence from class is considered a serious matter and absence never excuses a student from class work. It is the responsibility of all instructors to distribute reasonable attendance policies in writing during the first week of class. Students are required to comply with the attendance policy set by each of their instructors. Students are not penalized if they are unable to attend classes or participate in exams on particular days because of religious beliefs, in accordance with Chapter 161, Section 224-a of the Education Law of the State of New York. Students who plan to be absent from classroom activity for religious reasons should discuss the absence in advance with their instructors. See college catalog for more information.*

Services for Students with Disabilities: *It is the College's policy to provide, on an individual basis, appropriate academic adjustments for students with disabilities, which may affect their ability to fully participate in program or course activities or to meet course requirements. Students with disabilities should contact the Coordinator of Access and Equity Services, to discuss their particular need for accommodations. All course materials are available in alternate formats upon request.*

Course Description

This is the second in a two-semester course sequence for students who intend to become elementary school teachers, or for students in the Early Childhood program. The course is designed to provide an understanding of the various mathematical concepts presented in elementary school. There is an emphasis on problem solving. Communicating using mathematical language and notation is stressed. Topics include probability and statistics, geometry, concepts of measurement, tessellations, congruence and constructions. MATH 115, together with MATH 113, fulfills the SUNY General Education Mathematics requirement. Prerequisites: C or better grade in MATH 113 or equivalent; RDNG 116 if required by placement testing; prior completion or concurrent enrollment in ENGL 100. 3 Cr. (3 Lec.) Fall and spring semesters.

Course Context/Audience

This course engages students in hands on mathematical activities and problem solving that will enhance their conceptual knowledge of mathematical theory, its current applications, and its presentation in the elementary classroom. The course has been designed for students in the Liberal Arts and Sciences: Early Childhood (Teacher Education Transfer) and the Liberal Arts and Sciences: Childhood (Teacher Education Transfer) A.S. degree programs.

Basic Skills/Entry Level Expectations

Writing: WC College level writing skills are required. See course co-requisites or pre-requisites.

Math: MC C or better in MATH 100 (if needed) or appropriate placement score. Course requires the use of intermediate algebra skills and mathematical reasoning.

Reading: R4 Before taking this course, students must satisfactorily complete RDNG 116 or have assessment indicating that no reading course was required.

Course Goals

Students in this course will continue (from Math 113) to develop their understanding of the mathematical concepts and the mathematical skills that are necessary to effectively teach early childhood and childhood mathematics. Exploration and modeling, conjecture and reasoning, and other problem solving techniques will be stressed as well as the communication of the solution process.

Course Objectives/Topics

Objective/Topic	% Course
Students will learn various techniques of collecting, analyzing, and presenting sample data.	20%
Students will learn to calculate simple and complex probability outcomes and be able to interpret the results.	20%
Students will learn various geometric relationships and be able to use them to solve problems.	20%
Students will be able to recognize congruence relationships and perform geometric constructions.	20%
Students will use various systems of measurement to compute area, mass, volume, surface area, and temperature.	20%

General Education Goals - Critical Thinking & Social/Global Awareness

CRITICAL THINKING OUTCOMES	HOW DOES THE COURSE ADDRESS THE OUTCOMES (Include required or recommended instructional resources, strategies, learning activities, assignments, etc., that must or could be used to address the goal/outcomes)
<p>Students will be able to</p> <ul style="list-style-type: none"> ➤ develop meaningful questions to address problems or issues. ➤ gather, interpret, and evaluate relevant sources of information. ➤ reach informed conclusions and solutions. ➤ consider analytically the viewpoints of self and others. 	<p>Students learn different methods for teaching math to various age groups to answer “how can I best teach this topic to these children”? Manipulatives relevant to the topic at hand, appropriate for a given age group.</p> <p>Students learn of a variety of sources to gather ideas and teacher resources. NCTM website, “Teaching Children Mathematics “magazine, classroom manipulatives and their associated activities.</p> <p>Students learn how to assess the effectiveness of different teaching methods. Comparison of different activities presented. This course shows alternate methods/viewpoints for teaching a topic. Manipulatives relevant to the topic at hand.</p>
SOCIAL/GLOBAL AWARENESS OUTCOMES	HOW DOES THE COURSE ADDRESS THE OUTCOMES (Include required or recommended instructional resources, strategies, learning activities, assignments, etc., that must or could be used to address the goal/outcomes)
<ul style="list-style-type: none"> ➤ Students will begin to understand how their lives are shaped by the complex world in which they live. ➤ Students will understand that their actions have social, economic and environmental consequences. 	<p>Assumptions based on one’s culture and experiences are challenged. Cheating is discussed</p> <p>Alternatives to expensive educational manipulatives are presented. Teacher impact on student opportunities is discussed. The responsibility of the early childhood educator is stressed. Reduce, reuse, and recycle are themes for elementary lessons.</p>

Instructional Methods

This course must emphasize "how did you find your solution?" as opposed to "what is the solution?" Refer to the National Council of Teachers of Mathematics (NCTM) Principles and Standards for School Mathematics.

The textbook(s) should be used as an organizational tool for the course. Lecture should be kept to a minimum.

Small group exploration will provide opportunities for students to discuss concepts and model problems. Hands-on activities should be used to reinforce concepts and teaching methodology.

Methods of Assessment/Evaluation

Method	% Course Grade
Tests/Quizzes	40-60%
Final	15-25%
Projects/Presentations	0-25%
Midterm	0-25%
Homework/Classwork/Groupwork	0-30 %

Text(s)

Mathematics for Elementary Teachers with Activities, Sybilla Beckmann, 4th Edition, © Pearson ISBN 978-0-321-82572-8

Required

Bibliography

Mathematics for Elementary School Teachers, 7th edition, Billstein, Libeskind, & Lou Lott, Addison Wesley Longman, ISBN 0-201-38408-6.

Mathematics for Elementary School Teachers: An Activity Approach, 6th edition, Albert B. Bennett & L. Ted Nelson, McGraw Hill, ISBN 0-07-253307-2

Mathematical Reasoning for Elementary Teachers, 2nd edition, Calvin Long & Duane DeTemple, Addison Wesley Longman, ISBN 0-321-04333-2.

Mathematics for Elementary Teachers: A Contemporary Approach, 4th edition, Gary L. Musser & William F. Burger, Prentice Hall, ISBN 0-13-246182-X.

Mathematics for Elementary Teachers, 3rd edition, Tom Bassarear, Houghton Mifflin Co. ISBN 0-618-34886-7.

National Council of Teachers of Mathematics (NCTM). Principles and Standards for School Mathematics.

National Council of Teachers of Mathematics (NCTM). Curriculum and Evaluation Standards for School Mathematics.

National Council of Teachers of Mathematics (NCTM). Professional Standards for Teaching Mathematics.

National Association for the Education of Young Children (NAEYC). The Young Child and Mathematics, ISBN 0-935989-97-8.

Other Learning Resources

Audiovisual

No resources specified

Electronic

No resources specified

Other

No resources specified