



MA 105-90-2: Math for Elementary Teachers I
School of Education & Behavioral Sciences
Winter 2021 / 3 Credits
Online

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Learning Materials:

- **Textbook:** Beckmann, Sybilla (2017). Mathematics for Elementary Teachers with Activities. 5th ed. Pearson. ISBN-10: 0134392795
- **CueThink:** An online problem-solving platform for mathematical discussions. 
- **GroupMe App:** A way to stay up-to-date with all class routines, assignments, and questions between you, your professor, and your classmates. 
- **Computer Folder/Google Drive/3-Ring Binder:** This should be comprised of provided guided notes lectures, class activities, CueThink problems, problem-solving sets, and exams.

Additional Resources:

- **Common Core State Standards (CCSS) for Mathematics**
 - <http://www.corestandards.org/Math/>

Essential Question(s):

1. What does it mean to reason mathematically?
2. How is mathematics used to quantify and compare situations and events?
3. How does learning mathematics conceptually help me to be a more efficient problem solver?

Course Catalog Description:

This course provides a foundation for prospective early childhood and elementary education majors with pre-K to 8 mathematics. Guided by NCTM Standards and through the study of concepts and properties of number systems; the four fundamental operations of arithmetic; the basic knowledge in data, the student will be able to undertake further study in mathematics education. *Offered every semester. This course fulfills Track C general education requirement in mathematics for Early Childhood Education and Elementary Education majors.*

Mission Statement:

The mission of the education division is to foster the education of teachers and leaders in education through programs based in the liberal arts tradition, Catholic Marianist's values, current research, and best practices.

Marianist Values:

1. Educate for Formation in Faith
2. Provide an Integral Quality Education
3. Educate in Family Spirit
4. Educate for Service, Justice, and Peace
5. Educate for Adaptation and Change

WASC Core Competencies:

1. Written Communication
2. Oral Communication
3. Quantitative Reasoning
4. Critical Thinking
5. Information Literacy

Program Learning Outcomes (PLOs):

1	Content Knowledge - Knowledge of subject matter such as reading/language, arts, mathematics, social sciences, science, visual arts, musical arts, and kinesthetic arts.
2	Developmentally Appropriate Practice - Knowledge of how students develop and learn, and engagement of students in developmentally appropriate experiences that support learning.
3	Pedagogical Content Knowledge - Knowledge of how to teach subject matter to students and application of a variety of instructional strategies that are rigorous, differentiated, focused on the active involvement of the learner.
4	Educational Technology - Knowledge of and application of appropriate technology for student learning.
5	Assessment for Learning - Knowledge of and use of appropriate assessment strategies that enhance the knowledge of learners and their responsibility for their own learning.
6	Diversity - Skills for adapting learning activities for individual differences and the needs of diverse learners and for maintaining safe positive, caring, and inclusive learning environments.
7	Focus on Student Learning - Skills in the planning and design of meaningful learning activities that support and have positive impact on student learning based upon knowledge of subject matter, students, the community, curriculum standards, and integration of appropriate technology.
8	Professional & Ethical Dispositions and Communication - Professional dispositions, professionalism in teaching, and ethical standards of conduct consistent with Marianist values, and positive and constructive relationships with parents, the school community and professional colleagues.

Course Learning Outcomes (CLOs):

1	Demonstrate mathematics content knowledge required for further study in mathematics education.
2	Use problem-solving skills to investigate real-life mathematical situations, formulate valid questions from problem situations, and represent situations verbally, numerically/symbolically, graphically, and/or geometrically.
3	Develop an appreciation for mathematics as a body of knowledge that is interesting and useful.

General Education Learning Outcomes:

<ul style="list-style-type: none"> Students will apply basic mathematical principles needed to function effectively and develop mathematical reasoning and problem-solving skills. Students will define, identify, locate, evaluate, synthesize and present or demonstrate relevant information.
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Alignment of Learning Outcomes:

	CLO 1	CLO 2	CLO 3
Marianist Values	-Provide an integral and quality education -Educate for adaptation and change	-Provide an integral and quality education -Educate for adaptation and change	-Provide an integral and quality education -Educate for adaptation and change
WASC Core Competencies	-Written Communication -Oral Communication -Quantitative Reasoning -Critical Thinking	-Written Communication -Oral Communication -Quantitative Reasoning -Critical Thinking	-Quantitative Reasoning -Critical Thinking
Program Outcomes	1, 2, 3, 4, 6, 7	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 6, 7
Essential Questions	1, 2, 3	1, 2, 3	1, 2, 3

Assessments:

Since this course is online, the dates noted are permanent. Read the textbook sections before you turn in assignments as indicated on the schedule at the end of this syllabus. The assignments described below are each designed to contribute in a different and significant way to your knowledge and experience relative to diagnosis and remediation of mathematics, and to teaching elementary mathematics. It will be your responsibility to turn in all assignments on time, as late assignments are not accepted. Feedback and grades on all assignments are provided within 7 days of submission.

1. Class Participation – 10% of Final Grade

Due: Ongoing evaluation by instructor throughout the semester

1: *Low Participation*

2: *Majority Participation*

3: *Full Participation*

Your cooperation and active participation are necessary to facilitate this course synchronously and asynchronously, including being actively involved in the class GroupMe app. However, you also have a responsibility to be responsive and participate fully in all asynchronous activities. It is important that you listen to the ideas of others and respect their thoughts. Your grade will be determined based a holistic evaluation of your professionalism and participation.

2. CueThink Problems – 20% of Final Grade

Due: Every Sunday by Midnight

5 points per problem

This online problem-solving platform is used to promote discussion around different types of open-ended mathematical situations. There are 8 CueThink problems provided throughout the semester where you are expected to provide a solution(s) to the problem, a verbal explanation of your solution, and provide professional feedback on other classmates' solutions. Registration instructions can be found on Canvas.

3. Problem-Solving Sets – 20% of Final Grade

Due: After the Completion of Every Chapter

10 points per set

Each chapter, you will be required to complete five questions from each chapter's content. These questions will require detailed explanation of thought processes and mathematical drawings to show solutions. Please understand that simply "getting the problem correct" is not always sufficient to earn full-credit for the questions.

4. Exams – 30% of Final Grade (15% Each)

Exam 1 (Chapters 1 – 4): Week 5

Exam 2 (Chapters 5 – 8): Week 10

50 points each

Both exams will focus on content demonstrated in the guided notes, activities/discussions that occur in class, and strategies used in your problem-solving sets.

5. Mathematical Approach Analyses – 20% of Final Grade (10% Each)

Mathematical Approach Analysis (Chapters 1 – 4): Week 5

Mathematical Approach Analysis (Chapters 5 – 8): Week 10

25 points each

You must observe and analyze how five different people, not from this course, solve particular mathematics problems covered in selected chapters mentally and on paper with algorithms/diagrams.

Grading Scale	
90 – 100 %	A
80 – 89 %	B
70 – 79 %	C
60 – 69 %	D
0 – 59 %	F

Kokua Ike Tutoring Center:

Kokua Ike provides access to free one-on-one tutoring for undergraduate students. The tutoring services are designed to guide students to the point at which they become independent learners, no longer needing a tutor. Subjects tutored include, but are not limited to: Biology, Mathematics, Nursing, English, etc. The tutoring center consists of trained Peer and Professional Tutors.

- In order to receive tutoring, a student must visit the Student Support Services building and complete a brief contract prior to receiving services.
- After submitting the form, a staff member will assist you in creating an online account that allows you to book an appointment through the online system.
- Hours of Operation: Monday – Friday 8:30am – 4:30pm
- Want to become a tutor? Ask me how!

Course Attendance Policy:

As stated in the Chaminade University Catalog, students are expected to attend all classes for courses in which they are registered. Students must follow the attendance policy as stipulated in the syllabus of Education Division courses. Penalties for not meeting the attendance requirements may result in lowering of the grade, withdrawal from the course, or failing the course.

1. Excused Absences.

1.1. Since it is expected that students will participate in all class sessions, excused absences are only granted in exceptional situations where evidence is provided by the student to the instructor. Examples would include illness (with verification by a doctor) or the death of a close family member. Students should notify their instructors when a situation prevents them from attending class and make arrangements to complete missed assignments. *While notification of the instructor by a student that he/she will be absent is courteous, it does not necessarily mean the absence will be excused.*

1.2. In cases where excused absences constitute a significant portion of a course's meetings (e.g., more than 20% of on-ground course meetings, or a significant portion of online or hybrid courses), the instructor should refer the case to the Dean with a recommendation on how the case should be handled (e.g., withdrawal or incomplete).

2. Unexcused Absences. Chaminade University policy states that in cases where unexcused absences are equivalent to more than a week of classes the instructor has the option of lowering the grade. In the Education Division, we have added detailed guidelines to cover different types of courses and class schedules:

2.1. On-Ground courses: Missing more than 2 weeks of class (6 classes) will result in an automatic lowering of one letter grade after final grade is calculated.

2.2. Online courses and online portion of hybrid courses: The instructor will specify and enforce expectations for online participation and receipt of assignments appropriate to the design of the course. For online/hybrid courses failure to log in for one week is equivalent to an absence in a traditional on-ground course. Two weeks of not logging in constitutes grounds for removal of the student from the course.

3. Additional Notes.

3.1. If a student does not logon to an online or hybrid course for the first two weeks, the instructor should notify the Dean and the student will be withdrawn from the course.

3.2. Any student who stops attending an on-ground course or stops participating in an online course without officially withdrawing may receive a failing grade.

University Policies

Academic Honesty Statement: Violations of the Honor Code are serious. They harm other students, your professor, and the integrity of the University. Alleged violations will be referred to the Office of Judicial Affairs. If found guilty of plagiarism, a student might receive a range of penalties, including failure of an assignment, failure of an assignment and withholding of the final course grade until a paper is turned in on the topic of plagiarism, failure of the course, or suspension from the University.

Violations of Academic Integrity: Violations of the principle include, but are not limited to:

- Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids, or other devices in any academic exercise.
 - Fabrication and Falsification: Intentional and unauthorized alteration or invention of any information or citation in an academic exercise. Falsification is a matter of inventing or counterfeiting information for use in any academic exercise.
 - Multiple Submissions: The submission of substantial portions of the same academic work for credit (including oral reports) more than once without authorization.
 - Plagiarism: Intentionally or knowingly presenting the work of another as one's own (i.e., without proper acknowledgment of the source).
 - Abuse of Academic Materials: Intentionally or knowingly destroying, stealing, or making inaccessible library or other academic resource materials.
- Complicity in Academic Dishonesty: Intentionally or knowingly helping or attempting to help another to commit an act of academic dishonesty.

Plagiarism includes, but is not limited to:

- Copying or borrowing liberally from someone else's work without his/her knowledge or permission; or with his/her knowledge or permission and turning it in as your own work.
- Copying of someone else's exam or paper.
- Allowing someone to turn in your work as his or her own.
- Not providing adequate references for cited work.
- Copying and pasting large quotes or passages without properly citing them.

Title IX Compliance: Chaminade University of Honolulu recognizes the inherent dignity of all individuals and promotes respect for all people. Sexual misconduct, physical and/or psychological abuse will NOT be tolerated at CUH. If you have been the victim of sexual misconduct, physical and/or psychological abuse, we encourage you to report this matter promptly. As a faculty member, I am interested in promoting a safe and healthy environment, and should I learn of any sexual misconduct, physical and/or psychological abuse, I must report the matter to the Title IX Coordinator. If you or someone you know has been harassed or assaulted, you can find the appropriate resources by visiting Campus Ministry, the Dean of Students Office, the Counseling Center, or the Office for Compliance and Personnel Services.

Disability Access: If you need individual accommodations to meet course outcomes because of a documented disability, please speak with me to discuss your needs as soon as possible so that we can ensure your full participation in class and fair assessment of your work. Students with special needs who meet criteria for the Americans with Disabilities Act (ADA) provisions must provide written documentation of the need for accommodations from the Counseling Center by the end of week three of the class, in order for instructors to plan accordingly. If a student would like to determine if they meet the criteria for accommodations, they should contact the Kokua Ike Coordinator at (808) 739-8305 for further information (ada@chaminade.edu).

Course Outline (Winter 2020)

*The professor reserves the right to make adjustments to this outline to better accommodate student needs.

Week # Date	Class Description	Assignments Due Each Sunday by Midnight
Week 1 January 11 th – 17 th	Introduction to Course & Syllabus Chapter 1: Numbers and the Base-Ten System [Pages 1 – 37] <ul style="list-style-type: none"> • <i>Section 1.1</i>: The Counting Numbers • <i>Section 1.2</i>: Decimals and Negative Numbers • <i>Section 1.3</i>: Reasoning to Compare Numbers in Base Ten • <i>Section 1.4</i>: Reasoning about Rounding 	January 17 th <ul style="list-style-type: none"> • GroupMe App Confirmation • CueThink Problem #1 • Problem-Solving Set (Chap. 1)
Week 2 January 18 th – 24 th	Chapter 2: Fractions and Problem-Solving [Pages 48 – 88] <ul style="list-style-type: none"> • <i>Section 2.2</i>: Defining and Reasoning About Fractions • <i>Section 2.3</i>: Equivalent Fractions • <i>Section 2.4</i>: Comparing Fractions • <i>Section 2.5</i>: Percent 	January 24 th <ul style="list-style-type: none"> • CueThink Problem #2 • Problem-Solving Set (Chap. 2)
Week 3 January 25 th – 31 st	Chapter 3: Addition and Subtraction [Pages 92 – 139] <ul style="list-style-type: none"> • <i>Section 3.1</i>: Interpretations of Addition and Subtraction • <i>Section 3.2</i>: The Commutative and Associative Properties of Addition, Mental Math, and Single-Digit Facts • <i>Section 3.3</i>: Why the Standard Algorithms for Adding and Subtracting Numbers in Base-Ten System Work • <i>Section 3.4</i>: Adding and Subtracting Fractions • <i>Section 3.5</i>: Adding and Subtracting with Negative Numbers 	January 31 st <ul style="list-style-type: none"> • CueThink Problem #3 • Problem-Solving Set (Chap. 3)
Week 4 February 1 st – 7 th	Chapter 4: Multiplication [Pages 142 – 190] <ul style="list-style-type: none"> • <i>Section 4.1</i>: Interpretations of Multiplication • <i>Section 4.2</i>: Why Multiplying by 10 is Special in Base-Ten • <i>Section 4.3</i>: The Commutative and Associative Properties of Multiplication, Area of Rectangles, and Volumes of Boxes • <i>Section 4.4</i>: The Distributive Property • <i>Section 4.5</i>: Properties of Arithmetic, Mental Math, and Single-Digit Multiplication Facts • <i>Section 4.6</i>: Why Algorithms for Multiplying Whole Numbers Work 	February 7 th <ul style="list-style-type: none"> • CueThink Problem #4 • Problem-Solving Set (Chap. 4)
Week 5 February 8 th – 14 th	Work Week <ul style="list-style-type: none"> • Exam 1 (Chap. 1 – 4) • Mathematical Approach Analysis (Chap. 1 – 4) 	February 14 th <ul style="list-style-type: none"> • Exam 1 (Chap. 1 – 4) • Mathematical Approach Analysis (Chap. 1 – 4)

Week 6 February 15 th – 21 st	Chapter 5: Multiplication of Fractions, Decimals, and Negative Numbers [Pages 196 – 219] <ul style="list-style-type: none"> • <i>Section 5.1:</i> Multiplying Fractions • <i>Section 5.2:</i> Multiplying Decimals • <i>Section 5.3:</i> Multiplying Negative Numbers • <i>Section 5.4:</i> Powers and Scientific Notation 	February 21 st <ul style="list-style-type: none"> • CueThink Problem #5 • Problem-Solving Set (Chap. 5)
Week 7 February 22 nd – 28 th	Chapter 6: Division [Pages 222 – 276] <ul style="list-style-type: none"> • <i>Section 6.1:</i> Interpretations of Division • <i>Section 6.2:</i> Division and Fractions and Division with Remainders • <i>Section 6.3:</i> Why Division Algorithms Work • <i>Section 6.4:</i> Fraction Division from the “How Many Groups?” Perspective • <i>Section 6.5:</i> Fraction Division from the “How Many in One Group?” Perspective • <i>Section 6.6:</i> Dividing Decimals 	February 28 th <ul style="list-style-type: none"> • CueThink Problem #6 • Problem-Solving Set (Chap. 6)
Week 8 March 1 st – 7 th	Chapter 7: Ratio and Proportional Relationships [Pages 282 – 297] <ul style="list-style-type: none"> • <i>Section 7.1:</i> Motivating and Defining Ratio and Proportional Relationships • <i>Section 7.2:</i> Solving Proportion Problems by Reasoning with Multiplication and Division 	March 7 th <ul style="list-style-type: none"> • CueThink Problem #7 • Problem-Solving Set (Chap. 7)
Week 9 March 8 th – 14 th	Chapter 8: Number Theory [Pages 337 – 373] <ul style="list-style-type: none"> • <i>Section 8.1:</i> Factors and Multiples • <i>Section 8.2:</i> Evens and Odds • <i>Section 8.3:</i> Divisibility Tests • <i>Section 8.4:</i> Prime Numbers • <i>Section 8.5:</i> Greatest Common Factor and Least Common Multiple • <i>Section 8.6:</i> Rational and Irrational Numbers 	March 14 th <ul style="list-style-type: none"> • CueThink Problem #8 • Problem-Solving Set (Chap. 8)
Week 10 March 15 th – 21 st	Work Week <ul style="list-style-type: none"> • Exam 2 (Chap. 5 – 8) • Mathematical Approach Analysis (Chap. 5 – 8) 	March 21 st <ul style="list-style-type: none"> • Exam 2 (Chap. 5 – 8) • Mathematical Approach Analysis (Chap. 5 – 8)