ED 323-01-1 – Elementary Math Methods II
School of Education & Behavioral Sciences
Spring 2020 / 3 Credits / Brogan 101
Tues & Thurs 11:30 – 12:50pm

Instructor: Dr. Travis Mukina
Email: travis.mukina@chaminade.edu
Phone: 808-440-4250

Office Hours: Brogan 132
Mon & Wed 2:30 – 3:30pm
Tues & Thurs 10:00 – 11:00am

Learning Materials:

- **Textbooks**:
  - J.A. Van DeWalle, K. Kary, J.M. Bay-Williams (2016). Elementary and Middle School Mathematics: Teaching Developmentally. 9th ed. Pearson. ISBN-10: 0133768937
  - Boaler, J., (2015). *Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages and innovative teaching* (1st ed.). Jossey-Bass. ISBN-13: 978-0470894521
- **Common Core State Standards (CCSS)** for grades K – 6. Electronic copy available at:
  - http://www.corestandards.org/wp-content/uploads/Math_Standards1.pdf
- **3-Ring Binder**: Throughout the course, you should keep a collection of the course material. This is comprised of handouts, class activities, problem-solving sets, and exams. Completed versions of handouts and problem-solving sets will be posted on Canvas under "Modules" after each are completed in class, or are graded.
- Other readings and video links will be provided when necessary.

Course Catalog Description:
This course provides an overview and applications of best practice mathematics instructional approaches, strategies, techniques, and assessment methods. Math concepts for students in grades 3 through 6 are explored using hands-on and problem-solving approaches.
Required: 8 hours of O&P
Prerequisite: Pass Praxis I or 9 hours of math credit, ED 220, ED 221, ED 322

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)

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	Know, understand, and use the major concepts and procedures that define number and operations, algebra, geometry, measurement, and data analysis and probability.
2	Engage in problem solving, reasoning and proof, communication, connections, and representation.
3	Plan lessons that teach upper elementary students: 1. To understand and use the major concepts and procedures that define number and operations, algebra, geometry, measurement, and data analysis and probability. 2. To explore, conjecture and reason logically; to solve non-routine problems; to communicate about and through mathematics; and to connect ideas within and between mathematics and other intellectual activity.
4	Know what mathematical preconceptions, misconceptions, and error patterns to look for in upper elementary student work as a basis to improve understanding and construct appropriate learning experiences and assessments.
5	Know and are able to help students understand the history of mathematics and contributions of diverse cultures to that history.
6	Foster students' use of appropriate technology.

Assessment:

Dates noted on the course schedule are tentative. Always be prepared to effectively participate to class discussions, analyze the thinking of others in class, and explain your thinking in every assignment. 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. Late assignments will not be accepted.

1. Attendance / Class Participation – 5% of Final Grade

Due: Ongoing evaluation by instructor throughout the semester

You are now well into your studies for your chosen career in teacher education. Important in the

concept of professionalism is your concern with becoming the best teacher you can become. Your attendance, promptness, attention, cooperation, and active participation are necessary to facilitate this process. If you are unable to attend class, it is your responsibility to notify your instructor and to find out what you missed that day during class from a classmate. It is your instructor's responsibility to challenge you to grow as a professional and to help you develop a professional disposition. However, you also have a responsibility to be in class every day, to be responsive, and participate fully in all class 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 in the following ways:

- Attendance
- Active Participation in Whole Class and Small Group Tasks

2. Problem-Solving Sets – 10% of Final Grade

Due: After the Completion of Every Chapter

20 points each

Each chapter you will complete a series of mathematical problems using strategies that elementary level students might use to complete the mathematical tasks. These questions will require detailed explanation of thought processes and mathematical drawings to show ideas. Please understand that simply "getting the problem correct" is not enough to earn full-credit for the question. The intention of these problems is to help you not only participate in class discussion, but to help you to deepen your own conceptual understanding of the mathematical concepts you may be teaching in the future. These will be submitted in class.

3. Research Article Reflections – 5% of Final Grade

Due: Throughout the Semester on Canvas

10 points each

Reading the selected articles is vital for your success in this class and your own future classroom. You will be required to do one (sometimes two) reading reflections per chapter on provided articles. These will be submitted on Canvas in a PDF format. The form in which you complete your reflection can be chosen from the following three options:

a. Written Reflection – requires a 150-word typed reflection of the article
b. Mind Map – summarize main ideas in a mind mapping format that shows strong understanding of the article and several of the main ideas presented in the article
c. Agree & Disagree – Make a bulleted list of 5 points in the article you agree with and 5 points in the article you disagree with. Each bullet point must be a complete sentence.

4. Jo Boaler Book Reflection– 10% of Final Grade

Due: At the End of Week 10

50 points

After the completion of reading Jo Boaler's book, *Mathematical Mindsets*, by the end of Week 10, you will write a 2 – 3 page, double-spaced reflection in APA format. Your book reflection must be submitted on Canvas in a PDF format.

5. O&P Assignments – 15% of Final Grade

Due: Randomly Throughout the Semester

20 points each

You will have five separate assignments to complete during your Observation & Participation time in the classroom you are assigned to this semester. Two of the assignments are simply submitting your email of official placement, and your completed time sheet when the semester is finished. The other three are true O&P assignments that take place in the classroom. These will be submitted on Canvas in a PDF format. Each of the three assignments will involve communication between yourself and

your mentor teacher. Please ensure your mentor teacher that if they have questions about the assignments they can contact me at any time. A summary of each assignment is given below. More details about the assignments will be posted on Canvas.

1) *Placement Confirmation Email* – Submit a screenshot, or a saved file of the email confirming your placement in your particular school, grade level, and name of mentor teacher.
2) *Observation Reflection* – a general reflection will be made about which of the 8 Mathematical Practices took place in the mathematics classroom during hours 1 – 4 of your O&P.
3) *Small Group Reflection* – a mathematical task will be completed with a group of 2 – 3 children during hours 5 – 6 of your O&P, and a reflection will be made on the thinking of the students you work with.
4) *Teaching Reflection* – you will coordinate with your mentor teacher to teach a lesson to the whole class during hours 7 – 8 of your O&P, and a reflection will be made on how the lesson turned out.
5) *Completed O&P Time Sheet* – Fill out the days and times you completed your hours. You and your mentor teacher sign must sign the bottom before submitting the completed time sheet.

6. Three-Act Fraction Task – 20% of Final Grade

Due:

100 points

You will design a Three-Act Fraction Task that focuses on one of the fractional content areas covered in this course with a partner. The task can involve any of the CCSS dealing with any of the fraction domains and standards discussed this semester. The task rubric and template will be given to you during the semester, as well as more information about what a Three-Act Task consists of. One individualized meeting with your professor will take place during the semester to discuss your Three-Act Fraction Task. Both you and your partner will submit the final version of the task on Canvas in a PDF format.

7. Mathematical Teaching Philosophy – 15% of Final Grade

Due:

50 points

During the semester, you will begin developing your personal mathematics teaching philosophy. You are to include at least 2 references to support your philosophy. You will submit a written philosophy in APA format, approximately 1 single-spaced page, which will answer the following questions:

a. If you were asked to describe "mathematics" to a parent, how would you respond? (Complete the statement, "To me, mathematics is…")
b. One goal we have for every child in our elementary classroom is that each child successfully learns mathematics. Can you share what it means for a child to successfully learn mathematics? (Complete the statement, "To me, learning mathematics requires…")
c. You have a picture of what mathematics is to you and what you think learning mathematics requires. What does it mean to be a "good mathematics teacher?" (Complete the statement, "To me, being a good mathematics teachers means…")
d. What factors do you feel will influence your teaching of mathematics?

Your philosophy will be graded on how well you support your statements with research of how children best learn mathematics, specific examples of your own observations, clear expectations of your own classroom, and the quality of your writing. The final version will be submitted on Canvas in a PDF format.

6. Exams – 20% of Final Grade (10% Each)

Due: Exam 1: Exam 2:

100 points each

There will be two exams in this course. Both exams will consist of pedagogical and mathematics content questions based on content identified in grades K – 6.

Assignments	Percentage of Final Grade
Attendance / Class Participation	5%
Problem-Solving Sets	10%
Research Article Reading Reflections	5%
Jo Boaler Book Reflection	10%
O&P Assignments	15%
Three-Act Fraction Task	20%
Mathematical Teaching Philosophy	15%
Exams	20%

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. Should you want to speak to a confidential source you may contact the following:

- Chaminade Counseling Center: 808-735-4845
- Any priest serving as a sacramental confessor or any ordained religious leader serving in the sacred confidence role.

Disability Access:
The University is committed to providing reasonable accommodations for all persons with disabilities. This syllabus is available in alternate formats upon request. Students who need accommodations must be registered with Student Disability Services. 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 the instructor to plan accordingly. Failure to provide written documentation will prevent your instructor from making the necessary accommodates. Please refer any questions to the Dean of Students.

Course Outline (Spring 2020)

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

Week # Date	**Class Description**	**Assignments Due**
Week 1/Day 1 January 14th	Introduction to Course & Syllabus	
Week 1/Day 2 January 16th	Book: *Chapter 15*: Developing Fraction Concepts (Meanings & Models) • Pages 339 – 346	
Week 2/Day 3 January 21st	Book: *Chapter 15*: Developing Fraction Concepts (Fractional Parts) • Pages 346 – 358 Article: "Ten Practical Tips for Making Fractions Come Alive and Make Sense" by Clarke, Roche, & Mitchell Number Talks Video: What is ¾ of 12? Using a Story Context	• Clarke, Roche, & Mitchell Reflection
Week 2/Day 4 January 23rd	Book: *Chapter 15*: Developing Fraction Concepts (Equivalent Fractions) • Pages 358 – 365 Number Talks Video: The Fraction Kit: A Conversation About Equivalence	
Week 3/Day 5 January 28th	Book: *Chapter 15*: Developing Fraction Concepts (Comparing Fractions) • Pages 365 – 369 Number Talks Video: Comparing 24/50 and 21/40	
Week 3/Day 6 January 30th	Book: *Chapter 16*: Developing Fraction Operations (Addition & Subtraction) • Pages 371 – 384 Article: "The Role of Representations in Fraction Addition and Subtraction" by Cramer, Wyberg, & Leavitt Number Talks Video: ½ + ½ , ½ + ¾: Developing Addition Strategies Number Talks Video: 3/4 - 3/8: Developing Subtraction Strategies	• Problem-Solving Set (Chap. 15) • Cramer, Wyberg, & Leavitt Reflection
Week 4/Day 7 February 4th	Book: *Chapter 16*: Developing Fraction Operations (Multiplication) • Pages 384 – 392	
Week 4/Day 8 February 6th	Book: *Chapter 16*: Developing Fraction Operations (Division) • Pages 392 – 401	• Gregg & Gregg Reflection

	Article: "Measurement and Fair-Sharing Models for Dividing Fractions" by Gregg & Gregg Number Talks Video: 1 / 3/8: Developing Division Strategies	
Week 5/Day 9 February 11th	Book: *Chapter 17*: Developing Concepts of Decimals and Percents • Pages 403 – 410 Article: "Decimal Fractions" by Martinie Number Talks Video: Placing 0.9, 0.13, 0.255 on the Number Line	• Problem-Solving Set (Chap. 16) • Martinie Reflection
Week 5 February 13th	**DR. MUKINA OFF-ISLAND**	**NO CLASS**
Week 6/Day 10 February 18th	Book: *Chapter 17*: Developing Concepts of Decimals and Percents • Pages 410 – 422	
Week 6/Day 11 February 20th	Book: *Chapter 17*: Developing Concepts of Decimals and Percents • Pages 422 – 427 Number Talks Video: 1/4 x 1/3: Connecting Fractions to Percentages	
Week 7/Day 12 February 25th	Book: *Chapter 18*: Ratios, Proportions, and Proportional Reasoning • Pages 429 – 442	• Problem-Solving Set (Chap. 17)
Week 7/Day 13 February 27th	Book: *Chapter 18*: Ratios, Proportions, and Proportional Reasoning • Pages 442 – 450 Article: "Multiple Ways to Solve Proportions" by Ercole, Frantz, & Ashline	• Ercole, Frantz, & Ashline Reflection • O&P Observation Reflection
Week 8 March 3rd	**DR. MUKINA OFF-ISLAND**	**NO CLASS**
Week 8 March 5th	**DR. MUKINA OFF-ISLAND**	**NO CLASS**
Week 9/Day 14 March 10th	Book: *Chapter 18*: Ratios, Proportions, and Proportional Reasoning • Pages 442 – 450 Number Talks Video: Proportional Reasoning String	
Week 9/Day 15 March 12th	**MIDTERM EXAM (CHAPTERS 15, 16, 17, & 18)**	• Problem-Solving Set (Chap. 18)

Week 10/Day 16 March 17th	Book: *Chapter 19*: Developing Measurement Concepts • Pages 453 – 467	
Week 10/Day 17 March 19th	Book: *Chapter 19*: Developing Measurement Concepts • Pages 467 – 481	• Jo Boaler Book Reflection
March 24th	**SPRING BREAK!**	**NO CLASS**
March 26th	**SPRING BREAK!**	**NO CLASS**
Week 11/Day 18 March 31st	Book: *Chapter 19*: Developing Measurement Concepts • Pages 481 – 487	
Week 11/Day 19 April 2nd	**Three Act Fraction Task Meeting**	
Week 12/Day 20 April 7th	Book: *Chapter 20*: Geometric Thinking and Geometric Concepts • Pages 488 – 495 Article: "Is a Rectangle a Square?" by Renne	• Problem-Solving Set (Chap. 19) Renne Reflection
Week 12/Day 21 April 9th	Book: *Chapter 20*: Geometric Thinking and Geometric Concepts • Pages 495 – 509 Article: "Prisms and Pyramids: Constructing Three-Dimensional Models to Build Understanding" by Koester	• Koester Reflection • O&P Small Group Reflection
Week 13/Day 22 April 14th	Book: *Chapter 20*: Geometric Thinking and Geometric Concepts • Pages 509 – 524	
Week 13/Day 23 April 16th	Book: *Chapter 20*: Geometric Thinking and Geometric Concepts • Blokus Board Game	
Week 14/Day 24 April 21st	Book: *Chapter 14*: Algebraic Thinking, Equations, and Functions • Pages 299 – 307 Article: "Teaching Algebra Without Algebra" by Kalman	• Problem-Solving Set (Chap. 20) • Kalman Reflection
Week 14/Day 25 April 23rd	Book: *Chapter 14*: Algebraic Thinking, Equations, and Functions • Pages 307 – 319	• Mathematical Teaching Philosophy
Week 15/Day 26 April 28th	Book: *Chapter 14*: Algebraic Thinking, Equations, and Functions • Pages 319 – 337	

Week 15/Day 27 April 30th	• Presentation of Three-Act Fraction Tasks	• Problem-Solving Set (Chap. 14) • O&P Teaching Reflection & Completed Time Sheet
May 1st	**FINAL EXAM (CHAPTERS 19, 20 & 14)**	• Full Version of Three-Act Fraction Task