



ED 322-01-1 – Elementary Math Methods I
School of Education & Behavioral Sciences
Fall 2019 / 3 Credits / Brogan 101
Tues & Thurs 2:30 – 3:50pm

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Office Hours: Brogan 132
Mon & Wed 2:30 – 3:30pm
Tues & Thurs 1:00 – 2:00pm

Learning Materials:

- **Textbook:** J.A. Van DeWalle, K. Kary, J.M. Bay-Williams (2016). Elementary and Middle School Mathematics: Teaching Developmentally. 10th ed. Pearson. ISBN: 9780134802084
- **Common Core State Standards (CCSS)** for grades K – 3. Electronic and hard copy:
 - 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 kindergarten through grade 3 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

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	<i>Content Knowledge</i> (Knowledge of subject matter)
2	<i>Developmentally Appropriate Practice</i> (Knowledge of how students develop and learn, and engagement of students in developmentally appropriate experiences that support learning)
3	<i>Pedagogical Content Knowledge</i> (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	<i>Educational Technology</i> (Knowledge of and application of appropriate technology for student learning)
5	<i>Assessment for Learning</i> (Knowledge of and use of appropriate assessment strategies that enhance the knowledge of learners and their responsibility for their own learning)
6	<i>Diversity</i> (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	<i>Focus on Student Learning</i> (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	<i>Professional & Ethical Dispositions and Communication</i> (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: <ol style="list-style-type: none"> 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 – 10% 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 – 15% 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 – 10% 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. Three-Act Task – 20% of Final Grade

Due: December 6th by Midnight

100 points

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

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

Due: Throughout the Semester on Canvas

25 points each

You will have three separate assignments to complete during your Observation & Participation time in the classroom you are assigned to this semester. 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. 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 accommodations. Please refer any questions to the Dean of Students.

Course Outline (Fall 2019)

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

Week # Date	Class Description [Assigned readings completed BEFORE class]	Assignments Due
Week 1 August 27 th	Introduction to Course & Syllabus	
Week 1 August 29 th	<p><u>Book</u>: <i>Chapter 1</i>: Teaching Mathematics in the 21st Century</p> <ul style="list-style-type: none"> • Pages 1 – 12 <p><u>Article</u>: “Improving The Planning & Teaching of Mathematics by Reflecting on Research” by Hoffman & Brahier</p>	<ul style="list-style-type: none"> • Hoffman & Brahier Reflection
Week 2 September 3 rd	<p><u>Book</u>: <i>Chapter 2</i>: Exploring What It Means to Know and Do Mathematics</p> <ul style="list-style-type: none"> • Pages 13 – 29 <p><u>Article</u>: “Relational Understanding and Instrumental Understanding” by Skemp</p>	<ul style="list-style-type: none"> • Skemp Reflection
Week 2 September 5 th	<p><u>Book</u>: <i>Chapter 3</i>: Teaching through Problem Solving</p> <ul style="list-style-type: none"> • Pages 30 – 54 <p><u>Article</u>: “Fostering Mathematical Thinking and Problem Solving: The Teacher’s Role” by Rigelman</p>	<ul style="list-style-type: none"> • Rigelman Reflection
Week 3 September 10 th	<p><u>Book</u>: <i>Chapter 3</i>: Teaching through Problem Solving</p> <ul style="list-style-type: none"> • Pages 30 – 54 	
Week 3 September 12 th	<p><u>Book</u>: <i>Chapter 4</i>: Planning in the Problem-Based Classroom</p> <ul style="list-style-type: none"> • Pages 55 – 82 <p><u>Article</u>: “Preparing for Problem Solving” by Holden</p>	<ul style="list-style-type: none"> • Holden Reflection
Week 4 September 17 th	<p><u>Book</u>: <i>Chapter 4</i>: Planning in the Problem-Based Classroom</p> <ul style="list-style-type: none"> • Pages 55 – 82 	
Week 4 September 19 th	<p><u>Book</u>: <i>Chapter 7</i>: Developing Early Number Concepts and Number Sense</p> <ul style="list-style-type: none"> • Pages 125 – 152 <p><u>Article</u>: “Number Concepts and Special Needs Students: The Power of Ten-Frame Tiles” by Losq</p>	<ul style="list-style-type: none"> • Losq Reflection
Week 5 September 24 th	<p><u>Book</u>: <i>Chapter 7</i>: Developing Early Number Concepts and Number Sense</p> <ul style="list-style-type: none"> • Pages 125 – 152 <p><u>Number Talks Video</u>: “Ten Frames: 8+6”</p>	

Week 5 September 26 th	Book: <i>Chapter 7: Developing Early Number Concepts and Number Sense</i> <ul style="list-style-type: none"> Pages 125 – 152 	
Week 6 October 1 st	1st Three-Act Task Meeting	No Formal Class
Week 6 October 3 rd	EXAM 1 (Chapters 1, 2, 3, 4, & 7)	
Week 7 October 8 th	Book: <i>Chapter 8: Developing Meanings for the Operations</i> <ul style="list-style-type: none"> Pages 153 – 182 <p>Article: “A Problem-Solving Alternative to Using Key Words” by Clement & Bernhard</p>	<ul style="list-style-type: none"> Clement & Bernhard Reflection
Week 7 October 10 th	Book: <i>Chapter 8: Developing Meanings for the Operations</i> <ul style="list-style-type: none"> Pages 153 – 182 <p>Number Talks Video: “Array Discussion: 8x25”</p>	
Week 8 October 15 th	Book: <i>Chapter 8: Developing Meanings for the Operations</i> <ul style="list-style-type: none"> Pages 153 – 182 	<ul style="list-style-type: none"> O&P Observation Reflection
Week 8 October 17 th	Book: <i>Chapter 9: Developing Basic Fact Fluency</i> <ul style="list-style-type: none"> Pages 183 – 210 <p>Article: “Learning Strategies for Addition and Subtraction Facts: The Road to Fluency and the License to Think” by Buchholz</p>	<ul style="list-style-type: none"> Problem-Solving Set (Chap. 8) Buchholz Reflection
Week 9 October 22 nd	Book: <i>Chapter 9: Developing Basic Fact Fluency</i> <ul style="list-style-type: none"> Pages 183 – 210 <p>Number Talks Video: “Multiplication String: 7x7”</p>	
Week 9 October 24 th	Book: <i>Chapter 9: Developing Basic Fact Fluency</i> <ul style="list-style-type: none"> Pages 183 – 210 <p>Article: “Research Suggests that Timed Tests Cause Math Anxiety” by Boaler</p>	<ul style="list-style-type: none"> Boaler Reflection
Week 10 October 29 th	2nd Three-Act Task Meeting	No Formal Class
Week 10 October 31 st	Book: <i>Chapter 10: Developing Whole-Number Place-Value Concepts</i> <ul style="list-style-type: none"> Pages 211 – 237 <p>Article: “Opportunities to Develop Place Value through Student Dialogue” by Kari & Anderson</p>	<ul style="list-style-type: none"> Problem-Solving Set (Chap. 9) Kari & Anderson Reflection

Week 11 November 5 th	<p><u>Book</u>: <i>Chapter 10</i>: Developing Whole-Number Place-Value Concepts</p> <ul style="list-style-type: none"> Pages 211 – 237 	
Week 11 November 7 th	<p><u>Book</u>: <i>Chapter 10</i>: Developing Whole-Number Place-Value Concepts</p> <ul style="list-style-type: none"> Pages 211 – 237 	<ul style="list-style-type: none"> O&P Small Group Reflection
Week 12 November 12 th	<p><u>Book</u>: <i>Chapter 11</i>: Developing Strategies for Addition and Subtraction Computation</p> <ul style="list-style-type: none"> Pages 238 – 272 <p><u>Number Talks Video</u>: “Addition: 38+37”</p>	<ul style="list-style-type: none"> Problem-Solving Set (Chap. 10)
Week 12 November 14 th	<p><u>Book</u>: <i>Chapter 11</i>: Developing Strategies for Addition and Subtraction Computation</p> <ul style="list-style-type: none"> Pages 238 – 272 <p><u>Number Talks Video</u>: “Subtraction: 70-59”</p>	
Week 13 November 19 th	<p><u>Book</u>: <i>Chapter 11</i>: Developing Strategies for Addition and Subtraction Computation</p> <ul style="list-style-type: none"> Pages 238 – 272 <p><u>Article</u>: “Using Research to Develop Computational Fluency in Young Mathematicians” by O’Loughlin</p>	<ul style="list-style-type: none"> O’Loughlin Reflection
Week 13 November 21 st	<p><u>Book</u>: <i>Chapter 12</i>: Developing Strategies for Multiplication and Division Computation</p> <ul style="list-style-type: none"> Pages 273 – 298 	<ul style="list-style-type: none"> Problem-Solving Set (Chap. 11)
Week 14 November 26 th	<p><u>Book</u>: <i>Chapter 12</i>: Developing Strategies for Multiplication and Division Computation</p> <ul style="list-style-type: none"> Pages 273 – 298 <p><u>Number Talks Video</u>: “Multiplication: 32x15”</p>	<ul style="list-style-type: none"> O&P Teaching Reflection
Week 14 November 28 th	THANKSGIVING BREAK!	NO CLASS!
Week 15 December 3 rd	<p><u>Book</u>: <i>Chapter 12</i>: Developing Strategies for Multiplication and Division Computation</p> <ul style="list-style-type: none"> Pages 273 – 298 <p><u>Article</u>: “The Distributive Property in Grade 3?” by Benson, Wall, & Malm</p>	<ul style="list-style-type: none"> Benson, Wall, & Malm Reflection
Week 15 December 5 th	EXAM 2 (Chapters 8, 9, 10, 11, & 12)	<ul style="list-style-type: none"> Problem-Solving Set (Chap. 12)
Work Day December 6 th		<ul style="list-style-type: none"> Final Version of Three-Act Task Completed O&P Time Sheet

