

ED 323 – Elementary Math Methods II Spring 2018 / Brogan 101 3 credits Tuesday & Thursday 11:30am – 12:45pm

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**Office Hours:** Brogan 132 *Monday* 12:00 – 1:30pm *Tuesday* 10:30 – 11:30am

#### Learning Materials:

- **Textbook**: J.A. Van DeWalle, K. Kary, J.M. Bay-Williams (2016). Elementary and Middle School Mathematics: Teaching Developmentally. 9th ed. Pearson. ISBN-10: 0133768937
- Common Core State Standards (CCSS) for grades K 6. Electronic copy or hard copy available at
  - o http://www.corestandards.org/wp-content/uploads/Math\_Standards1.pdf
- Other readings and video links will be provided when necessary.
- **3-Ring Binder**: Throughout the course, you should keep a collection of the course material. This is comprised of chapter handouts, class activities, and problem-solving sets. All will be posted on Canvas under weekly "Modules" and should be kept in an organized binder.
- **GroupMe App**: Reminders, updates, and changes about the course will be posted here. It may also be used to ask questions to classmates or the professor. Any personal questions or comments, please DM me or email me.

#### **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	<i>Educational Technology</i> (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	<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 &amp; 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	<ul> <li>Plan lessons that teach upper elementary students:</li> <li>1. To understand and use the major concepts and procedures that define number and operations, algebra, geometry, measurement, and data analysis and probability.</li> <li>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.</li> </ul>				
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.				

#### Style of Teaching:

This course will utilize a variety of teaching strategies including, but not limited to: lecture, small & large group discussion, as well as collaborative in-class & out-of-class activities. Please read the text assignments and/or handouts provided before class. Always be prepared to discuss the materials in a variety of ways.

In a class in which students are at the center, in which students interact and collaborate, and in which one shares power, it is difficult to assign exact portions of time to given tasks, we will try to remain as flexible with the schedule as possible so that we can meet the needs of the class. The class will be approached through an inquiry-based (problem-solving) format, breaking the class time into numerous segments so that we don't become too tired and unfocused to think, learn, and participate. This approach requires the learner to think, to create his/her own knowledge, and to connect and synthesize information rather than passively "receiving" information to memorize and regurgitate.

#### Assessment:

Dates noted are tentative. Read text assignments & handouts and BEFORE class as indicated on the tentative schedule at the end of this syllabus. Always be prepared to discuss the materials in class. 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 upper-elementary mathematics. It will be your responsibility to turn in all assignments on time. Late assignments will <u>not</u> be accepted. Submissions may vary from Canvas to turning hard copies in during class.

#### 1. Attendance / Professionalism / 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. Attitude and responsibility are also important aspects of professionalism. 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 & Professionalism
- Active Participation in Small Group Tasks
- Active Participation in Whole Class Discussions

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

# Due: At the Completion of Every Chapter

#### 10 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. The readings, videos, and presentations can be used to help you make sense of how to solve these problems and prepare you to teach these to students in the future. It is important that you are diligent in solving these each week to the best of your ability. 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.

# 3. Article Reading Reflections – 5% of Final Grade

# Due: Throughout the Semester on Canvas

#### 5 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 over different provided articles. 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 must be a complete sentence.

# 4. Lesson Plans – 20% of Final Grade

Presentation: May 3<sup>rd</sup> Final Lesson Plans Due: May 9<sup>th</sup> on Canvas by Midnight 120 points

Two individualized meetings with your professor will take place during the semester to discuss two connected lesson plans. With a partner (or small group), you will design and reflect on the development of problem-based lessons, including two consecutive lessons - on a topic in 3<sup>rd</sup> through 6<sup>th</sup> grade mathematics. The lessons need to build on each other in a logical manner and should require active participation and investigation on the part of students in a 3<sup>rd</sup> through 6<sup>th</sup> grade classroom.

- a. You will select a grade, a CCSS domain, and develop objectives and goals for your lessons and select/develop two problem-based high cognitive demand tasks for your lesson plans.
- b. Once your standards, goals, objectives, and tasks are approved by the professor, you will develop your unit with your partner (or small group) using the provided lesson plan template on Canvas. Once you are finished with your lesson plan, you will develop a 7 10-minute presentation that outlines your goals, objectives, standards, tasks, description of how your lessons build on one another, differentiation, and assessments.
  - Your lessons should involve the students in investigation and inquiry this should be evident in your lesson plan in the questions you ask.
  - Your lesson plans should be written for three normal class periods (45 minutes 1 hour each lesson plan).
- c. Using your peers' and instructor's feedback on your presentation, make changes to your lesson and develop a final product to submit on Canvas for your final grade.

# 5. O&P Reflections – 10% of Final Grade

# *Due: Throughout the Semester on Canvas. All due by May* 9<sup>th</sup>. *10 points each*

An important part of your effort in this course will be devoted to observing and participating. You will be required to observe and participate in an assigned classroom for a minimum of 8 hours this semester. Attendance starting once the semester begins is required and contact must be made with your mentor teacher as soon as possible to select dates to attend. Failure to attend O&P sessions could result in an automatic lowering of your final grade by one letter. Appropriate, casual-professional dress at all O&P sessions is extremely important.

 O&P Reflections will reflect on your observation experience five different times during the semester. Your responses need to reflect an understanding of effective methods for teaching mathematics at the upper elementary level. Specific topics of reflections are posted on Canvas.

# 6. Mathematical Teaching Philosophy – 10% of Final Grade

# Due: May 1<sup>st</sup> on Canvas by Midnight

#### 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.

#### 7. Midterm & Final Exams – 40% of Final Grade (20% Each)

Due: Midterm – March 8<sup>th</sup> Final – May 9<sup>th</sup> 100 points each

There will be a midterm exam and a final exam. The midterm and final exam will consist of pedagogical and mathematics content questions based on content identified in grades 3 through 6. Make-up examinations will be given only for very serious and unavoidable conflicts and only if your request to present a make-up examination is approved by your instructor in advance. If this condition is not satisfied, it is understood that the opportunity to present a make-up examination is voided.

Assignments	Percentage of Final Grade
Attendance / Professionalism / Participation	5%
Problem-Solving Sets	10%
Article Reading Reflections	5%
Lesson Plans	20%
O&P Reflections	10%
Mathematical Teaching Philosophy	10%
Midterm Exam	20%
Final Exam	20%

Grading Scale			
90 – 100 %	А		
80 - 89 %	В		
70 – 79 %	С		
60 – 69 %	D		
0 – 59 %	F		

#### **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.

Tentative Course Outline (Spring 2018) \*The professor reserves the right to make adjustments to this outline to better accommodate student needs.

Week # / Day # Date	Class Description [Assigned readings completed BEFORE class]		Assignments Due
<b>Week 1 / Day 1</b> January 16 <sup>th</sup>	Introduction to Course, Syllabus, & GroupMe		
<b>Week 1 / Day 2</b> January 18 <sup>th</sup>	<ul> <li>Chapter 15: Developing Fraction Concepts (Meanings &amp; Models)</li> <li>Pages 339 – 346</li> </ul>		
Week 2 / Day 3 January 23 <sup>rd</sup>	<ul> <li>Chapter 15: Developing Fraction Concepts (Fractional Parts)</li> <li>Pages 346 – 358</li> <li>Article: Clarke, Roche, &amp; Mitchell</li> </ul>	•	Clarke, Roche, & Mtichell Reflection
Week 2 / Day 4 January 25 <sup>th</sup>	Chapter 15: Developing Fraction Concepts (Equivalent Fractions) • Pages 358 – 365		
Week 3 / Day 5 January 30 <sup>th</sup>	<ul> <li>Chapter 15: Developing Fraction Concepts (Comparing Fractions)</li> <li>Pages 365 – 369</li> </ul>		
<b>Week 3 / Day 6</b> February 1 <sup>st</sup>	<ul> <li>Chapter 16: Developing Fraction Operations (Addition &amp; Subtraction)</li> <li>Pages 371 – 384</li> <li>Article: Cramer, Wyberg, &amp; Leavitt</li> </ul>	•	Problem-Solving Set 1 (Chap. 15) Cramer, Wyberg, & Leavitt Reflection
<b>Week 4 / Day 7</b> February 6 <sup>th</sup>	<ul> <li>Chapter 16: Developing Fraction Operations (Multiplication)</li> <li>Pages 384 – 392</li> </ul>		
<b>Week 4 / Day 8</b> February 8 <sup>th</sup>	<ul> <li>Chapter 16: Developing Fraction Operations (Division)</li> <li>Pages 392 – 401</li> <li>Article: Gregg &amp; Gregg</li> </ul>	•	Gregg & Gregg Reflection
<b>Week 5 / Day 9</b> February 13 <sup>th</sup>	Chapter 17: Developing Concepts of Decimals and Percents • Pages 403 – 410	•	Problem-Solving Set 2 (Chap. 16)
<b>Week 5 / Day 10</b> February 15 <sup>th</sup>	Chapter 17: Developing Concepts of Decimals and Percents Pages 410 – 422		
<b>Week 6 / Day 11</b> February 20 <sup>th</sup>	<ul> <li>Chapter 17: Developing Concepts of Decimals and Percents</li> <li>Pages 422 – 427</li> <li>Article: Martinie</li> </ul>	•	Martinie Reflection

Week 6 / Day 12 February 22 <sup>nd</sup>	<ul> <li>1<sup>st</sup> Lesson Planning Unit Meeting</li> <li>CCSS Domain and Grade Chosen</li> </ul>	•	No Formal Class
<b>Week 7 / Day 13</b> February 27 <sup>th</sup>	<ul> <li>Chapter 18: Ratios, Proportions, and Proportional Reasoning</li> <li>Pages 429 – 442</li> </ul>	•	Problem-Solving Set 3 (Chap. 17)
Week 7 / Day 14 March 1 <sup>st</sup>	<ul> <li>Chapter 18: Ratios, Proportions, and Proportional Reasoning</li> <li>Pages 442 – 450</li> <li>Article: Ercole, Frantz, &amp; Ashline</li> </ul>	•	Ercole, Frantz, & Ashline Reflection
Week 8 / Day 15 March 6 <sup>th</sup>	<ul> <li>Chapter 18: Ratios, Proportions, and Proportional Reasoning</li> <li>Pages 442 – 450</li> </ul>		
Week 8 / Day 16 March 8 <sup>th</sup>	MIDTERM EXAM	•	Problem-Solving Set 4 (Chap. 18)
Week 9 / Day 17 March 13 <sup>th</sup>	<ul> <li>Chapter 19: Developing Measurement Concepts</li> <li>Pages 453 – 467</li> </ul>		
<b>Week 9 / Day 18</b> March 15 <sup>th</sup>	<ul> <li>Chapter 19: Developing Measurement Concepts</li> <li>Pages 467 – 481</li> </ul>		
Week 10 / Day 19 March 20 <sup>th</sup>	<ul><li>Chapter 19: Developing Measurement Concepts</li><li>Pages 481 – 487</li></ul>		
Week 10 / Day 20 March 22 <sup>nd</sup>	<ul> <li>2<sup>nd</sup> Lesson Planning Unit Meeting</li> <li>2 Activities Chosen with Assessments</li> </ul>	•	No Formal Class
March 27 <sup>th</sup>	SPRING BREAK!		NO CLASS!
March 29 <sup>th</sup>	SPRING BREAK!		NO CLASS!
Week 11 / Day 21 April 3 <sup>rd</sup>	<ul> <li>Chapter 14: Algebraic Thinking, Equations, and Functions</li> <li>Pages 299 – 307</li> </ul>	•	Problem-Solving Set 5 (Chap. 19)
Week 11 / Day 22 April 5 <sup>th</sup>	<ul> <li>Chapter 14: Algebraic Thinking, Equations, and Functions</li> <li>Pages 307 – 319</li> </ul>		
Week 12 / Day 23 April 10 <sup>th</sup>	<ul> <li>Chapter 14: Algebraic Thinking, Equations, and Functions</li> <li>Pages 307 – 319</li> </ul>		
<b>Week 12 / Day 24</b> April 12 <sup>th</sup>	<ul> <li>Chapter 14: Algebraic Thinking, Equations, and Functions</li> <li>Pages 319 – 337</li> </ul>	•	Kalman Reflection
	Article: Kalman		

Week 13/ Day 25 April 17 <sup>th</sup>	<ul> <li>Chapter 20: Geometric Thinking and Geometric</li> <li>Concepts</li> <li>Pages 488 – 495</li> </ul>	•	Problem-Solving Set 6 (Chap. 14) Renne Reflection
	Article: Renne		
<b>Week 13 / Day 26</b> April 19 <sup>th</sup>	<ul> <li>Chapter 20: Geometric Thinking and Geometric Concepts</li> <li>Pages 495 – 509</li> <li>Article: Koester</li> </ul>	•	Koester Reflection
<b>Week 14 / Day 27</b> April 24 <sup>th</sup>	<ul> <li>Chapter 20: Geometric Thinking and Geometric Concepts</li> <li>Pages 509 – 514</li> </ul>		
<b>Week 14 / Day 28</b> April 26 <sup>th</sup>	<ul> <li>Chapter 20: Geometric Thinking and Geometric</li> <li>Concepts</li> <li>Pages 514 – 524</li> </ul>		
<b>Week 15 / Day 29</b> May 1 <sup>st</sup>	Work Day	•	Mathematical Teaching Philosophy
<b>Week 15 / Day 30</b> May 3 <sup>rd</sup>	Group Presentations of Lesson Plans	•	Problem-Solving Set 7 (Chap. 20)
Finals Week May 9 <sup>th</sup>	FINAL EXAM (8:30 – 10:30am)	•	Submissions of O&P Reflections Ends Final Draft Submission of Unit Plan