



**EDUC 767/ED 445  
Montessori Math Methods**

<b>Semester/Year</b> Summer 2016	<b>Instructor:</b> Sylvia Loveless
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<b>Class Title:</b> Montessori Math Methods	<b>Phone:</b> Cell: 916-588-7082
<b>Course Format:</b> On Ground Brogan Hall Room 101 & Online  <b>ONLINE ACCESS:</b> <a href="http://www.chaminade.college.com">http://www.chaminade.college.com</a> <b>LOGIN:</b> CUH ID (7 DIGIT NUMBER) <b>PASSWORD:</b> Last 4 Digits of Social Security	<b>Office Hours/When to Contact:</b> By appointment and online.
<b>Class Time/Day:</b> <b>On Ground Brogan Hall Room 101</b> 9 a.m. – 6 p.m.  <b>Online</b> July 25-September 15	<b>O&amp;P/Service Requirement:</b> N/A
<b>Text 1:</b> The Early Math Collaborative, Erikson Institute (2014) <i>Big Ideas of Early Mathematics</i> Boston: Pearson ISBN: 978-0-13-294697-1 <a href="http://montessorimethods.weebly.com/textbooks.html">http://montessorimethods.weebly.com/textbooks.html</a>	<b>Text 2:</b> Montessori, M. (1967). <i>The discovery of the child</i> . New York: Ballantine Books. ISBN 0-345-33656-9 <a href="http://montessorimethods.weebly.com/textbooks.html">http://montessorimethods.weebly.com/textbooks.html</a>
<b>Text 3:</b> Bredekamp, S., & Copple, C. (2009). <i>Developmentally appropriate practice in early childhood programs serving children from birth through age 8</i> (3d ed.). Washington D.C: NAEYC. ISBN: 978-1-928896-64-7 <a href="http://montessorimethods.weebly.com/textbooks.html">http://montessorimethods.weebly.com/textbooks.html</a>	<b>Text 4</b> Montessori Math Methods Manual- Purchase online at: <a href="http://montessorimethods.weebly.com/manuals.html">http://montessorimethods.weebly.com/manuals.html</a>

**Catalog Description:**

Development of neuromotor function and the senses in children ages two and a half to eight. Content explores the influence of culture on brain development, activities for developing the senses and sensori-motor function, and the relationship to other content areas such as reading and math. Research component is required.

**Conceptual Framework:**

The Education Division's Conceptual Framework is based upon a set of beliefs that flow from the University's vision and mission statements, the Division's vision and mission statements, and the core academic beliefs of Chaminade University. These values and beliefs are based on the Catholic Marianist principles; a commitment to mentor teacher and educational leader candidates to their fullest potential; a commitment to teaching, scholarship and research; and a commitment to serve the university and the larger community. This alignment is designed to prepare education professionals who meet the National Council for Accreditation of Teacher Education (NCATE) standards for effective teaching by demonstrating professional dispositions and empathy, content knowledge, and the pedagogical/leadership skills to work effectively work with a diverse community of learners.

**Major Course Topics:**

1. Guide students as they develop a basic understanding of the rationale and sequence of mathematics curriculum in a Montessori early childhood environment.
2. Describe, define and provide opportunities for the students to analyze and model the leadership role of an adult in the mathematics area of a Montessori early childhood environment.
3. Provide opportunities, through explanation, demonstration, and modeling, for students to learn to create the mathematics curriculum of the prepared environment, in accordance with Montessori principles of design, with particular focus on developmentally appropriate materials and activities in the mathematics area of the early childhood environment.
4. Provide opportunities to practice strategies for, the implementation and evaluation of the mathematics area of the early childhood prepared environment in terms of meeting developmental needs.
5. Share, and show students how to find, current peer-reviewed research articles, particularly in the areas of the inter-relationships of motor and cognitive development, creation of community and culturally appropriate practice.
6. Provide guidance to relate all the knowledge to HTSB, NAEYC, and MACTE standards and how adaptation accommodations can be made to fit the needs of the

non-Montessori environment.

**Program Learning Outcomes (PLOs):**

Successful teacher candidates in Chaminade University of Honolulu's initial teacher licensure programs will demonstrate knowledge, skills, and dispositions in the following areas:

<b>PLO 1</b>	<b>Content Knowledge</b> ( <i>Knowledge of subject matter</i> )
<b>PLO 2</b>	<b>Developmentally Appropriate Practice</b> ( <i>Knowledge of how students develop and learn, and engagement of students in developmentally appropriate experiences that support learning</i> )
<b>PLO 3</b>	<b>Pedagogical Content Knowledge</b> ( <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</i> )
<b>PLO 4</b>	<b>Educational Technology</b> ( <i>Knowledge of and application of appropriate technology for student learning</i> )
<b>PLO 5</b>	<b>Assessment for Learning</b> ( <i>Knowledge of and use of appropriate assessment strategies that enhance the knowledge of learners and their responsibility for their own learning</i> )
<b>PLO 6</b>	<b>Diversity</b> ( <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</i> )
<b>PLO 7</b>	<b>Focus on Student Learning</b> ( <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</i> )
<b>PLO 8</b>	<b>Professional &amp; Ethical Dispositions and Communication</b> (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)

**Montessori Accreditation Council for Teacher Education (MACTE) Competencies**

1. **Knowledge:** The candidate understands
  - a. Montessori Philosophy
  - b. Human growth and Development
  - c. Subject matter for Early Childhood level not to exclude:
    - i. Cosmic education
    - ii. Peace education
    - iii. Practical life

- iv. The arts
  - v. Fine and gross motor skills
  - d. Community resources for learning
2. **Pedagogy:** The candidate understands
- a. Correct use of Montessori materials
  - b. Scope and sequence of curriculum (spiral curriculum)
  - c. The prepared environment
  - d. Parent/teacher/ family/community partnership
  - e. The purpose and methods of observation
  - f. Planning for instruction
  - g. Assessment & documentation
  - h. Reflective practice
  - i. Support and intervention for learning differences
  - j. Culturally responsive methods
3. **Teaching with Grace and Courtesy:** The candidate for certification demonstrates and implements with children
- a. Classroom leadership
  - b. Authentic assessment
  - c. The Montessori philosophy and methods (materials)
  - d. Parent/teacher/ family partnership
  - e. Professional responsibilities
  - f. Innovation and flexibility

### **Course Learning Objectives:**

At the end of this course, the student:

<b>CLO 1</b> <b>MACTE 1a</b> (HTSB 1,2,5) (NAEYC 1,5)	Demonstrates an understanding of and implements Montessori philosophy with a focus on the early childhood years.
<b>CLO 2</b> <b>MACTE 1b</b> (HTSB 1,2,5) (NAEYC 1,5)	Comprehends and utilizes an understanding of the stages of human growth, development, and educational theories with an emphasis from two and one-half (2 1/2) through six (6) years of age.
<b>CLO 3</b> <b>MACTE 1c</b> (HTSB 9,10) (NAEYC 5)	Demonstrates evidence of personal growth through self-evaluation and introspection
<b>CLO 4</b> <b>MACTE 2b</b> (HTSB 1,2,3,4,5) (NAEYC1,5)	Utilizes cultural sensitivity in support of the development of individual children.

<b>CLO 5</b> <b>MACTE 3a</b> (HTSB 1,2, 3, 4,5, 8) (NAEYC 1,3)	Demonstrates the principles of Montessori environmental and material design.
<b>CLO 6</b> <b>MACTE 3b</b> (HTSB 15,6,7) (NAEYC 1,3,4)	Articulates the rationale and sequence of the Montessori curriculum.
<b>CLO 7</b> <b>MACTE 3c</b> (HTSB 5, 6,7, 8) (NAEYC 3,4)	Demonstrates proficiency in applying Montessori principles in the context of the curriculum, didactic materials, and lesson presentations.

### **Linkages between Course Learning Objectives (CLOs) and Program Learning Objectives**

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8
CLO 1	X	X	X					
CLO 2	X							X
CLO 3	X	X				X	X	X
CLO 4	X	X			X	X	X	X
CLO 5								
CLO 6	X	X	X					
CLO 7	X	X	X				X	

### **Essential Questions Addressed in This Course**

Essential Questions	Related CLO's	Related PLO's
What are the key components of Montessori's philosophy of mathematics and how are these practiced in the classroom?	1, 2, 3	1,2,
What is the purpose of mathematics to the overall philosophy and methodology of Montessori teaching and learning?	6, 7	1,2,3,4, 5, 6, 7, 8
What competencies and practical experiences in making, presenting math lessons, and setting up a math area in a classroom based upon scope and sequence; are essential to the professional development of Montessori teachers?	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5, 6, 7, 8

**Key Teaching-Learning Strategies** This is an online course. The key instructional,

learning, strategies and activities include:

- Readings
- Class and online lessons
- Class and online discussions
- Written assignments
- Writing a rationale
- Individual research
- Self-reflection
- Rubrics
- Setting up mathematics areas
- Practicing working with math materials
- Creating math materials
- Demonstrating how to present lessons in mathematics

<b>Course learning Objectives</b>	<b>Instructional Activities</b>	<b>Assessment/s</b>
<b><u>CLO 1</u></b>	<b>Readings, online discussions, making materials and lesson plan, setting up math shelves, writing mathematics rationale</b>	<b>Online discussions, making materials and lesson plan, setting up math shelves, writing mathematics rationale</b>
<b><u>CLO 2</u></b>	<b>Readings, online discussions, making materials and lesson plans, setting up math shelves, writing mathematics rationale</b>	<b>Readings, online discussions, making materials and lesson plans, setting up math shelves, writing mathematics rationale</b>
<b><u>CLO 3</u></b>	<b>Readings, class and online lessons, online discussions, individual research</b>	<b>Self-reflections, self-assessments as a result of practice and setting up math areas, creating and demonstrating mathematics activity and lesson plan</b>
<b><u>CLO 4</u></b>	<b>Readings, classroom and online discussions and lessons, writing rationale, and individual research</b>	<b>Writing rationale, demonstration of competencies in presenting, demonstrating and creating math lessons.</b>
<b><u>CLO 5</u></b>	<b>Readings, class and online lessons, setting up a mathematics area according to</b>	<b>Setting up a mathematics area according to scope and sequence, creating a math</b>

	scope and sequence, creating a math activity and lesson and writing a rationale	activity and lesson and writing a rationale
<b><u>CLO 6</u></b>	Class and online lessons, setting up a mathematics area according to scope and sequence, creating a math activity and lesson and writing a rationale	Setting up a mathematics area according to scope and sequence, creating a math activity and lesson and writing a rationale
<b><u>CLO 7</u></b>	Class and online lessons, setting up a mathematics area according to scope and sequence, creating a math activity and lesson and writing a rationale	Setting up a mathematics area according to scope and sequence, creating a math activity and lesson and writing a rationale

### **Course Requirements**

<b>Assignment</b>	<b>Pts</b>	<b>Assignment Description</b>	<b>Due Date</b>
Attendance & Participation (Practice)	10 points	<b>Attendance, Participation, and Practice</b> <ul style="list-style-type: none"> <li>• Arrive and leave on time; attend sessions.</li> <li>• Actively and enthusiastically participate in session discussions and practice.</li> <li>• Practice with materials on a daily basis as assigned to develop pedagogical skill</li> </ul>	On-Ground and Ongoing Online July-Sept
Discussions Online	10 points	<b>Discussion Online (10 Points)</b> You will post your thoughts on discussion questions to two topics.  For full points you will need to: <ul style="list-style-type: none"> <li>• post discussion posting by due date</li> <li>• respond to at least one other classmate's posting by due date</li> </ul> <b>To create a threaded discussion response:</b>  <b>Click on (Respond).</b>  <b>To reply to your classmate's post:</b>  Click on <b>(Reply)</b> . Each student will be required to post a minimum of two responses to their	Post Discussion Week 8 Friday 11 p.m.  Responses to Classmates (at least two)  Week 8 Sunday

		classmate's posts per module.	11 p.m.
Reflections	10 points	<p><b>Reflections on Readings</b></p> <p>Prepare a 3-5 page reflection paper for each of 5 sets of readings</p> <p>For full points each reflection will:</p> <ul style="list-style-type: none"> <li>• Be written in Standard American English</li> <li>• Include connections to personal and professional experience</li> <li>• Compare Montessori's methods to DAP and contemporary research on emergent reading and writing.</li> </ul> <p>The paper should cover the following reflective topics:</p> <ol style="list-style-type: none"> <li>a. Teaching how to count and developments to arithmetic</li> <li>b. Choose a topic from your textbook readings to which you have a strong positive or negative reaction. Compare and contrast that topic with your Montessori reading with particular emphasis on the two chapters in <i>Discovery of the Child</i> (chapters 18 and 19)</li> </ol>	Week 8 Friday 11 p.m.
Performance Practice	10 points	<p><b>Performance Practice</b></p> <p>For full points, student will:</p> <ul style="list-style-type: none"> <li>• name activity / placement on shelf</li> <li>• identify appropriate age range</li> <li>• give accurate presentation</li> <li>• identify direct and indirect aims</li> <li>• identify points of interest and control of error</li> </ul>	
Activity	25 points	<p><b>Key Assignment: Activity</b></p> <p>Students will make and demonstrate a developmentally appropriate math activity inspired by children's literature. This activity lesson plan will include appropriate standards and benchmarks, student learning objectives, content, assessment plan, procedures, and reflections. This lesson also examines how the lesson plan can be adapted to mainstream early</p>	Week 10 Friday 11 p.m.



		<p>childhood environment that includes developmentally appropriate modifications to meet the needs of diverse and exceptional learners.</p> <p>For full points, activity will</p> <ul style="list-style-type: none"> <li>• be aesthetically made</li> <li>• have original elements</li> <li>• be appropriate for age</li> <li>• include lesson plan that includes criteria listed above</li> <li>• be clearly and gracefully presented</li> </ul> <p>Please submit your activity lesson plan write-up in Doc Sharing prior to your presentation. After your instructor's feedback you will submit your final version in LiveText by <b>Friday (Week 10) 11 p.m.</b></p>	
Math Album	35 points	<p><b>Key Assignments: Math Rationale and Album</b></p> <p>An album that incorporates math activities that promote developmental math concepts. Albums will include the big idea (rationale), lessons, photos, and resources for teaching math curriculum to young children. Each of the lessons included in these albums will include adaptation and accommodations and appropriate content standards.</p> <p>1) Rationale (10 pts.)</p> <p>For full points Rationale will:</p> <ul style="list-style-type: none"> <li>○ be written in Standard American English and APA style</li> <li>○ have a clear introduction and supporting paragraphs</li> <li>○ include a complete summary</li> <li>○ be at least two pages with 12 point font/ one inch margins</li> <li>○ answer the questions <i>what, why, where, and when</i></li> <li>○ include at least one appropriate quote from your reading</li> </ul> <p>2) Lessons, Photos, Standards, and</p>	<p>Week 10 Friday 11 p.m.</p>

		Accommodations (10 pts.) 3) Resources (5 pts.)  Please <a href="#">click here</a> to view the rubric for the rationale.	
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**Assessment:** Your performance in this course will be assessed on the following:

**1. Attendance, Participation, and Practice Rubric**

Full points will be awarded to those who turn in assignments on time, and who participate in the classroom and in online discussions with enthusiasm, flexibility and respect and to those who attend all face-to-face and online sessions and actively participates in session discussions and practice per the guidelines described in the academic requirements.

**2. Discussion Online Rubric**

You will post your thoughts on discussion questions to two topics related to math. For full points each reflection will:

- Post discussion postings by due date
- Respond to at least one other classmate's posting by due date
- Identify direct and indirect aims
- Identify points of interest and control of error

**3. Reflections on Readings Rubric**

- Prepare a 4 page reflection paper on readings. For full points this reflection paper will:
- Be written in Standard American English
- Include connections to personal experience
- Compare Montessori's writings to Developmentally Appropriate Practice

**4. Math Activity and Lesson Plan (25 pts)**

Make and demonstrate one math activity based on children's literature with a math theme/content.

For full points, activity will:

- Be aesthetically made
- Have original elements
- Be appropriate for age
- Include lesson plan
- Be clearly and gracefully presented

**5. Math Album (35 points)**

- Rationale—10 pts.
- Lessons /Photos—20 pts.
- Resources—5 pts.

The Math Album should incorporate culturally and developmentally appropriate mathematics activities. The album will include the big idea (rationale), lessons, photos, and resources for the teaching of mathematics curriculum to young children. Each of the lessons included in these albums will include adaptation and accommodations as well as appropriate content standards.

**Please see eCollege and LiveText for detailed rubrics.**

Attendance and participation	10 points
Online discussions	10 points
Reflections	10 points
Performance practice	10 points
Activity with lesson plan	25 points
Album with Rationale	35 points

**TOTAL 100 POINTS**

#### **Grading Scale:**

- A- 90-100 points
- B- 80-90 points
- Below 79: must retake the class

Anything below 79 points (graduate students) is not a passing grade and the class will have to be re-taken. All written course assignments must follow American Psychological Association (APA) standards for writing student papers (See chapter six of APA manual 6<sup>th</sup> ed.).

#### **Key Assignments:**

To document candidates' progress toward the mastery of the requisite knowledge, skills and dispositions for teacher licensure, all required courses have key assignments. Key assignments are assessed via a rubric linked to the relevant program learning outcome(s).

The key assignments will need to be submitted to Livetext. Submission of Key Assignments and other assignments as identified by instructor require a *LiveText* account. Login to *LiveText* at [www.livetext.com](http://www.livetext.com)

All written course assignments must follow American Psychological Association (APA) standards for writing student papers (See chapter six of APA manual 6<sup>th</sup> ed.).

The signature assignments for this course are the development of:

- Activity and Lesson Plan
- Math Album- Includes Rationale, Lessons/Photos, Resources

#### **University Policies:**

**Attendance:** 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 of the Division* as appropriate for the course format (on-ground, hybrid, or online). Penalties for not meeting the attendance requirements may result in lowering of the grade, withdrawal from the course, or failing the course.

A summary of the Education Division's attendance policy is attached at the end of this syllabus.

**Writing Standards:** All work submitted by Chaminade University students must meet the following writing standards. Written assignments should:

1. Use correctly the grammar, spelling, punctuation, and sentence structure of Standard Written English.
2. Develop ideas, themes, and main points coherently and concisely.
3. Adopt modes and styles appropriate to their purpose and audience.
4. Be clear, complete, and effective.
5. Carefully analyze and synthesize material and ideas borrowed from sources. In addition, the sources of the borrowed material should be correctly acknowledged to avoid plagiarism.

**Plagiarism:** Plagiarism is the offering of work of another as one's own. Plagiarism is a serious offense and may include, but is not limited to, the following:

1. Complete or partial copying directly from a published or unpublished source without proper acknowledgement to the author. Minor changes in wording or syntax are not sufficient to avoid charges of plagiarism. Proper acknowledgement of the source of a text is always mandatory.
2. Paraphrasing the work of another without proper author acknowledgement.
3. Submitting as one's own original work (however freely given or purchased) the original exam, research paper, manuscript, report, computer file, or other assignment that has been prepared by another individual.

Please refer to your **Student Handbook** and the **Graduate Catalog** for other important institutional and academic policies including more detailed information regarding Grading, Plagiarism, Classroom Department, Freedom of Expression, Add/Drop, Disabilities, and others.

**Diversity/Full Inclusion:** Chaminade University of Honolulu is committed to a policy of non-discrimination and recognizes the obligation to provide equal access to its programs, services, and activities to students with disabilities. If a student is in need of accommodation due to a documented disability, he/she should contact the Counseling Center at 735-4845 or 739-4603. A determination will be made if the student meets the requirements for documented disability in accordance with the Americans with Disabilities Act. It is important to contact them as soon as possible so that accommodations are implemented in a timely fashion.

Beyond the legal requirements Chaminade's Education Division is committed to an integral,

quality education that begins with respect for the complexity and diversity of each person. Subsequently, faculty members attempt to engage the whole person with quality courses and activities that challenge the intellectual, emotional, aesthetic, physical, and ethical dimensions that make up each student's life experience.

### **Education Division Attendance Policy (Revised 3/8/10)**

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.**

- 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.
- 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:

- **On-ground courses.** When unexcused absences total more than 10% of the number of classes will result in a lowering of the overall grade by one letter grade. A student who misses 20% or more should withdraw or be administratively withdrawn.
  - Accelerated Semester Classes (10 classes): More than one absence lowers grade one letter. Missing more than two classes results in failure or withdrawal.
  - Undergraduate Day Courses T/Th (30 classes): More than 3 absences lowers grade one letter. Missing more than six classes results in failure or withdrawal.
  - Undergraduate Day Courses MWF (45 classes): More than 4 absences lowers grade one letter. Missing more than nine classes results in failure or withdrawal.
- **Hybrid courses** (online combined with 3 or more on-ground meetings) One absence from on-ground classes lowers grade one letter. Two or more absences from on-ground meetings results in failure or withdrawal. For the online portion of the course the instructor will specify and enforce expectations for online

participation and receipt of assignments appropriate to the design of the course.

- **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.

**3. Additional Notes**

- *If a student does not log on 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.*
- *Any student who stops attending an on-ground course or stops participating in an online course without officially withdrawing may receive a failing grade.*