MATH 112 - Mathematics for Elementary Teachers II
(64157) 3 Credits
TTh 8:30 am - 9:45 am

INSTRUCTOR: Clayton K. Akatsuka, Professor, Mathematics
OFFICE: Mana 112
OFFICE HOURS: TTh 9:45 am – 10:15 am, 12:45 – 1:15 pm; or by appointment
TELEPHONE: 236-9279
e-mail: akatsuka@hawaii.edu
EFFECTIVE DATE: Spring 2012

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT
Windward Community College is committed to excellence in the liberal arts and career development; we support and challenge individuals to develop skills, fulfill their potential, enrich their lives, and become contributing, culturally aware members of our community.

Disabilities Accommodation Statement
If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Disability Specialist Counselor to discuss reasonable accommodations that will help you succeed in this class. Ann Lemke can be reached at 235-7448, lemke@hawaii.edu, or you may stop by Hale ʻAkoakoa 213 for more information.

CATALOG DESCRIPTION
Math 112 is the second of a two-course sequence designed to give prospective elementary education majors the depth of understanding necessary to teach mathematics in the elementary classroom. Topics include the representation of and operations on the natural numbers and properties of those operations. Emphasis will be on communication, connections and problem solving, representations and reasoning.

STUDENT LEARNING OUTCOMES
The student learning outcomes for the course are:
1. Apply formal rules or algorithms in set operation.
2. Utilize precise mathematical language and symbols to effectively communicate mathematics in written and/or oral form and in the presentation of evidence.
3. Use appropriate symbolic techniques to analyze and solve problems, and in the critical evaluation of evidence.
4. Utilize the concept of proof as a chain of inferences.
5. Solve problems using postulates and/or theorem-like statements related to arithmetic operations and set theory.

**FOUNDATION HALLMARKS**

Math 112 fulfills 3 credits of the General Education requirements (Foundations: Symbolic) for both an A.A. degree at WCC and a Bachelor’s degree at UH Manoa. Consequently, it meets the following hallmarks of the symbolic reasoning requirement:

1. Students will be exposed to the beauty, power, clarity and precision of formal systems.
2. Instructors will help students understand the concept of proof as a chain of inferences.
3. Instructors will teach students how to apply formal rules or algorithms.
4. Students will be required to use appropriate symbolic techniques in the context of problem solving, and in the presentation and critical evaluation of evidence.
5. The course will not focus solely on computational skills.
6. Instructors will build a bridge from theory to practice and show students how to traverse this bridge.

**COURSE CONTENT**

<table>
<thead>
<tr>
<th>Concepts or Topics</th>
<th>Skills or Competencies/Responsibilities of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Pairing</td>
<td>Success in this course will be enhanced by:</td>
</tr>
<tr>
<td>• Number of Elements in a Set</td>
<td>1. a positive, inquiring attitude towards learning mathematics;</td>
</tr>
<tr>
<td>• Equivalent Sets</td>
<td>2. setting aside adequate time for studying and working of problems;</td>
</tr>
<tr>
<td>• Less Than or Greater Than</td>
<td>3. seeking assistance from the instructor and the Math Lab personnel whenever necessary;</td>
</tr>
<tr>
<td>• Infinite Sets</td>
<td>4. completing assignments by the designated date;</td>
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<tr>
<td>• Addition</td>
<td>5. regular class attendance, participation and maintaining accurate class notes.</td>
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<tr>
<td>• Subtraction</td>
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</tbody>
</table>

**COURSE TASKS**

The mode of instruction is primarily discussion-problem solving where the initial portion of each class period may be utilized to discuss and clarify any questions from the preceding class meeting and/or assignment, and the remaining portion is used to discuss new material. Lectures, directed student explorations, group work, appropriate technologies, and projects will also be used as appropriate.

**ASSESSMENT TASKS AND GRADING**

The student will demonstrate competency in the objectives by participating in and completing all class activities, by completing and turning in all assignments as requested, by taking unit tests, and by taking a final exam over concepts and skill covered in the entire course. Class activities, unit tests, and
the final exam are to be taken in the classroom and without any references unless otherwise stipulated by the instructor.

It is the student’s responsibility to obtain and complete all assignments that are given in any class meeting for which the student is unable to attend. Unless permission is granted by the instructor beforehand, assignments and tests must be completed and submitted to the instructor at the specified date and time.

Points will be assigned to each graded assignment, class activity, and tests as follows:
1. **Homework.** Homework sets will be graded on a 0 - 5 point scale. Assignments are due at the next class meeting to the instructor. Late homework is not accepted.

2. **Class Activity.** Class activities are done in class. Class activities will be graded on a 0 - 3 point scale. There is no make-up for a missed class activity. Students must be present in class to participate.

3. **Unit Exam.** Four unit exams are given in class. A unit exam will be approximately 50 minutes in length and will be scored on a 100-point scale. There is no retest.

4. **Final Exam.** The final exam will cover the concepts and skills in the entire course. The final exam is one hour, fifty minutes in length and will be scored on a 200-point scale. There is no retest. There is no make-up.

Make-up opportunity for a chapter test will be possible only upon a timely presentation of a serious and justified explanation of the student’s absence from the class test. The instructor has the right to request documentation of the student’s absence from the class and to determine if the absence from the class test is justified. A make-up test must be taken within one week of the in-class test unless otherwise specified by the instructor. **No more than one test may be taken by a student on a make-up basis.**

**Course grade.** Each letter grade for the course will be assigned according to the level of achievement as provided in the table below:

<table>
<thead>
<tr>
<th>GRADE</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>90% - 100% of the total possible points</td>
</tr>
<tr>
<td>B</td>
<td>80% - 89%  of the total possible points</td>
</tr>
<tr>
<td>C</td>
<td>70% - 79%  of the total possible points</td>
</tr>
<tr>
<td>Cr</td>
<td>70% - 100% of the total possible points</td>
</tr>
<tr>
<td>NC</td>
<td>Less than 70% of the total possible points</td>
</tr>
<tr>
<td>D</td>
<td>60% - 69%   of the total possible points</td>
</tr>
<tr>
<td>F</td>
<td>Less than 60% of the total possible points</td>
</tr>
</tbody>
</table>

Note: Students must apply for the Cr/NC grading option at the Admissions Office. Consult the WCC Catalog for deadlines.

Note: W grade is given only when the student officially withdraws from the course at the Admissions Office. Consult the WCC Catalog for deadlines.

**LEARNING RESOURCES**
The Math 112 course booklet (available for sale at the Bookstore) is required. It should be placed in a
three-ring binder along with additional materials distributed in class. Written assignments, class activities and notes should also be kept in the folder.

*Thinking Mathematically* by Blitzer and *The Nature of Mathematics* by Smith may be helpful references. Copies are available in the Library, Math Lab and the instructor’s office.

**Activities Required at Scheduled Times Other Than Class Times**

Homework, Math Lab or TTC activities as needed.

Math Lab: Mana 113

TTC: Alakai 106

**Additional Information**

1. Grading on Homework, Class Activities or Tests. To receive full marks for problems done on any graded activity, you must show your work neatly and completely as well as provide clear written explanations when it is asked for. Partial credit may be awarded.

2. Absences. It is your responsibility to attend every class meeting. Even if you are absent, you are responsible for those topics and examples covered in class that you missed. Furthermore, you are responsible for obtaining any important announcements and assignments given during the class you missed. If you are absent frequently or for an extended period of time, contact the instructor as soon as possible to discuss your situation. Absences and tardiness to class can have a negative impact on your success in this course.