UHWO Mission Statement
The mission of the University of Hawai'i - West O'ahu is to become a four-year comprehensive university with an emphasis on baccalaureate education founded in the liberal arts, serving professional, career-related, and applied fields, based on State and regional needs. UH West O'ahu is committed to providing access to residents throughout the State of Hawai'i through its partnerships with the University of Hawai'i Community Colleges and its delivery of distance education programs. (UHWO General Catalog, 2014-2015)

Course Information
Course Title: Math 112 Math for Elementary School Teachers II
CRN: 69261
Course Credits: 3
Meeting Times: TR 2:00 - 3:20pm
Room Location: LAB E 133
Duration: 1/12/2015 - 5/8/2015

Instructor Contact Information
Instructor: Michal Nowicki
Email: michaln@hawaii.edu
Office: Lecturers' Office in E building
Phone: (808) 721–0657
Office Hours: By Appointment

MyMath Lab: nowicki62538

Required Textbook
A Problem Solving Approach to Mathematics for Elementary School Teachers. 11th Edition by Billstein, Libeskind, and Lott. Publisher: Pearson, Copyright: 2013 (If you already purchased the accompanying MyMathLab access last semester, you do NOT need to buy this again)

*Scientific calculator is required (do not need a graphing calculator)

Course Description and Prerequisites
Math 112- Math for Elementary Teachers II is designed especially for prospective elementary school teachers, to enhance their mathematical skills, and to prepare them to take the teaching-methods course. The course is not intended to be a course in elementary-school math, nor a course in how to teach elementary-school math. Rather, it is intended to give prospective teachers a specialized understanding of the math they will be teaching. This type of understanding is different from what it takes to do well in a math course as a student or good at other jobs that require mathematics; it is also essential for effective teaching. This course is the second in the sequence of two math courses required for students in the K-6 B.Ed. degree program.

Pre-requisites: Grade of “C” or better in MATH 111, or consent of instructor.
Course Objectives and Student Learning Outcomes

This course is designed for you as a learner of mathematics, who, specifically, is becoming a teacher of mathematics. The course focuses on mathematical content for teaching, and includes not only topics, ideas, skills and procedures in specific mathematical domains, but also the mathematical thinking and reasoning involved in the mathematical tasks that teachers do.

Through this course you will develop a flexible understanding of important mathematical ideas and processes within the areas of whole number concepts and the whole number system, computation and estimation with whole numbers, number patterns and number theory, integers, fractions and rational numbers, decimals and real numbers, geometry and measurement; and develop the ability to engage in important mathematical practices that are fundamental to teaching.

Upon successful completion of Math 112 - Math for Elementary Teachers II, the student will be able to apply critical thinking, including rules of logical sequence, to problem-solving. The student will have a clearer understanding and insight into algebraic and geometric concepts and techniques and into the power of mathematics and symbolic reasoning (ILO 3, GELO 3). Specifically, the student will be able to carry out the following:

1. Possess adequate knowledge and flexible understanding of the mathematics necessary for teaching students in grades K-6, and the ability to use that knowledge.
2. Understand the central features of an adequate mathematical explanation and be able to provide such explanations.
3. Be able to interpret, evaluate, and respond to the ideas, explanations, solutions and methods of others.
4. Be able to identify and analyze student errors.
5. Be able to choose and use multiple representations (verbal, symbolic, visual, etc.), examine correspondences and equivalences among representations, and make sense of representations different from your own.
6. Be able to adequately communicate mathematical ideas both in writing and orally, in a clear convincing, and accurate way and make use of appropriate representations when applicable.

The aforementioned student learning outcomes are aligned with the UHWO Institutional Learning Outcome Critical Thinking (ILO 3) to demonstrate critical thinking skills by applying information to make well-reasoned arguments or solve a problem, and the UHWO General Learning Outcome Symbolic Reasoning (GELO 3) to use quantitative and symbolic reasoning to obtain accurate results in solving problems.

General Education Foundations - Symbolic Reasoning (FS)
This course falls under the designation of symbolic reasoning (FS). The hallmarks for symbolic reasoning include exposing students to the beauty and power of formal systems, as well as to their clarity and precision. This course does not focus solely on computational skills. Students should understand the concept of proof as a chain of inferences. They should be able to apply formal rules or algorithms, and engage in hypothetical reasoning. In addition, students will develop the ability to use appropriate symbolic techniques in the context of problem solving, and in the presentation and critical evaluation of evidence.
Instructor’s Goals and Objectives
This is a course about mathematics and mathematical thinking and is intended for the serious learner who is interested in studying deductive and inductive reasoning strategies in the context of mathematical situations. Students should be cognizant that doing mathematics amounts to solving problems, whether in class, textbook assignments, real-world applications, or other methods. Problems are the medium through which mathematical information ebbs and flows and are the most important part of this course. Therefore, much of the class meetings will be spent in a give-and-take discussion of problems, proofs, and reasoning.

The eminent mathematician George Polya separated problems of mathematics into two major categories: problems to find and problems to prove. Math 112 - Math for Elementary Teachers II incorporates the heuristics of general problem solving. The student is implicitly encouraged to use diagrams, schematics, and representation models to assist thinking, to reason by analogy to similar situations, to develop a multiplicity of perspectives in viewing the facets of a mathematical idea, to work backwards from the desired result to the given status, to distinguish between patterns search and mathematical induction as well as between conjecture and verified generalization, to search for counterexamples, to exploit symmetry whenever possible, and to learn to ask important key questions: “Why?”; “How come?”; “What for?”; and “What if?”

Every field of endeavor has at least two internal dimensions: information and information management. In mathematics, the informational aspect includes definitions, axioms, postulates, theorems, basic ideas, and algorithmic techniques. These things characterize what we learn. Equally important, if not more so, however, are those reasoning skills that allow us to shape and mold mathematical information so as to make it work for us, either in everyday applications or in theory extension. These characterize how we manage the information we have learned. To access those information-management strategies that involve deduction, one can study mathematics under a microscope in a rigorous, axiomatic, and formal manner, hoping to distill the essential abstract qualities of that reasoning or one can study the reasoning itself and apply it to a variety of mathematical problems for reinforcement.

Math 112- Math for Elementary Teachers I students are encouraged to reflect on their own thinking in the context of a framework of reasoning generally accepted by mathematicians; to compare, contrast, sift, and winnow those patterns of reasoning; and to learn to carry on a mathematical conversation with him/herself by asking strategy-oriented internalized questions. Students should expect to develop skills in planning, formulating, communicating, executing, analyzing, and clarifying arguments and proofs, as well as understanding the deductive thinking of others. To assist in this process, we will be engaging in practical applications and field study throughout the course of the semester.

UHWO Teacher Education Mission Statement
The UHWO Teacher Education program is dedicated to its vision of providing innovative teacher preparation programs and public service activities in support of the continuing development of West O‘ahu communities. To realize this vision, the mission of the program is to provide teacher candidates with the knowledge, skills, and dispositions necessary to become outstanding educators, especially in the elementary schools located in central and leeward communities.
UHWO Teacher Education Conceptual Framework

The Conceptual Framework (CF) serves as a guide for fulfilling the UHWO Teacher Education Program vision of preparing highly qualified teachers for entry into the skilled workforce. The program recognizes the contributions of general education, content area studies, and professional studies to the preparation of educators. Three key values underlie the professional studies philosophy and objectives: (1) standards-based education, (2) student-centered learning, and (3) an orientation to social justice. Within this framework, the UH West O’ahu Bachelor of Education degree program develops teacher candidates who have the knowledge, skills and dispositions to:

- meet the rigorous professional standards for teaching in order to help their students meet high standards for learning,
- teach in a caring, student-centered manner, differentiating instruction as needed to enable all learners to succeed, and
- understand issues of equity, use culturally responsive instruction, and build bridges between school and community.

Course Requirements

- **Exams**: There will be several chapter exams, both take-home and in-class that will consist of the material covered in each chapter studied.

- **Final Exam / Project**: To be determined during the course. Could be an application problem, or a lesson centered on one of the topics covered that you will teach to the class.

- **Homework**: Homework will be mostly online, with occasional assignments submitted in class. MyMathLab ([http://www.pearsonmylab.com](http://www.pearsonmylab.com)) is the platform that will be used and it also comes with an eBook and other online tools that will enhance your learning experience.

  - Course ID: nowicki62538

- **Daily Quizzes**: It is expected that students will read the material covered prior to class. Therefore, there may occasionally be a short daily 5 minutes quiz at the beginning of the class period. The questions will come from the homework assignment due and course material to be covered that day.

- **Class participation**: Attendance and class participation is mandatory. Your participation in class activities and discussions is important not only for your own learning but also the learning of others. If circumstances prevent you from attending class, please notify me in advance when possible. Any student who misses the equivalent of two weeks of class will be counseled to drop the course. Extenuating circumstances will be dealt with on individual basis.
Grades

20% Midterm Exam
20% Daily Quizzes
20% Homework Assignments
20% Class Participation
20% Final Exam and / or Final Project

Letter Grade

A  Exceptional Achievement [93.33-100%]
A- [90-93.33%)
B+ [86.67-90%)
B  Above Average Quality [83.33-86.67%]
B- [80-83.33%)
C+ [76.67-80%)
C  Average/Acceptable Work [73.33-76.67%]
C- [70-73.33%)
D+ [63.33-70%)
D  Minimally Passing or Not Fully Satisfactory [56.67-63.33%)
D- [50-56.67%)
F  Not Satisfactory [0-50%)

Other Policies and Expectations

● Make-up Policy: Students who miss a test or a quiz due to an unexcused absence will not be provided make-up exams or quizzes. Make-ups are only available for extreme circumstances (death in immediate family or a medical emergency). No more than one make-up exam and quiz may be taken.

● No Cell Phones or any other electronic devices (other than a calculator) may be used during class unless specified otherwise by the instructor.

● Study Time: The UHWO Credit Hour Policy states that students in a 3-credit course are expected to devote a minimum of 9-hours a week (135 hours/semester) on course related work (see UHWO General Catalog). In accordance with the UHWO Credit Hour Policy, this source was reviewed to assure that the work assigned to achieve the stated student learning outcomes meets the UHWO credit hour policy. To achieve adequate learning in this course, it is expected that students will need to devote a minimum of 9 hours a week attending scheduled class meetings, completing assigned readings, working on study questions, researching and writing reflection papers, and studying for scheduled exams and quizzes.

● The University of Hawai‘i - West O’ahu is an academic community with high professional standards. Its teaching, research, and service purposes are seriously disrupted and subverted by academic dishonesty, including plagiarism and cheating. In accordance with this, a student conduct code is defined below. The code delineates the appropriate hearing procedures and various sanctions that may be imposed, ranging from a warning, restitution where appropriate, to probation, suspension, expulsion, or the rescission of grades or degree. Copies of the student conduct code are available through the Student Services Office and our website at: http://www.uhwo.hawaii.edu/conduct.
Student Services

● UHWO No‘eau Center for Writing, Math, and Academic Success
  In Spring 2008, UH West O’ahu opened a new undergraduate Math Center based on a National Science Foundation grant, which is not part of the UHWO No‘eau Center for Writing, Math, and Academic Success. UHWO mathematics combines academic mentoring with personalized tutoring and research experiences, all of which are critical to achieve our goal of increased student success in college, particularly for traditionally underrepresented students. Tutoring occurs in the UHWO No‘eau Center for Writing, Math, and Academic Success located in the Library Room 203 (Tel.: 808-689-2750), and open hours will be posted within the first couple of weeks of classes. UHWO also has the capacity to facilitate online tutoring.

● Physical or Learning Disability Accommodations
  The University of Hawai‘i-West O‘ahu is committed to providing a working and learning atmosphere, which reasonably accommodates qualified persons with disabilities. If you have any disability that may impair your ability to complete this course successfully, please contact the Student Services Office at 808-689-2689. Reasonable academic accommodations are reviewed for all students who have qualified documented disabilities.

● Safety
  The safety of students is a priority at the University of Hawai‘i-West O‘ahu. The telephone number for security at UHWO is 808-689-2911.

● Library
  The UHWO Library is committed to providing seamless access to both print and electronic resources; to instructing and guiding students, faculty, staff and community members on how to use such resources; to creating a sense of place - and not just space - on campus where the University community can connect and engage; and to enabling students to make independent, confident decisions regarding their information needs now and beyond their undergraduate careers. Check their website for hours of operation.

● Kealiaikahiki
  Kealiaikahiki Native Hawaiian Student Support Services provides tutoring, peer mentoring & support, guest speakers, seminars & workshops, cultural events, community service projects, and student activities. You can contact them at uhwohiki@hawaii.edu or by phone at (808) 689-2684

● Health and Wellness Services
  The University of Hawai‘i West O’ahu offers free and confidential mental health services for all enrolled students. These services include individual and group therapy, couples counseling, and psychological assessment. For additional information contact Dr. Taketa by phone or email (taketas@hawaii.edu) or visit his office in the Student Affairs Department (C244). Walk-in appointment are welcome, your participation is completely voluntary, and general inquiries about health and wellness are encouraged.