Instructor:  
Janie P. Bower, NBCT (retired)  
Contact information:  e-mail:  jbower@wmcarey.edu  ; phone: Math Dept.: 601-318-6173; 601-990-8241(H)  

Text:  
Dolan/Williamson/Muri.  Mathematics Activities for Elementary School Teachers  (Pearson)  

Catalog Description:  
MAT 316. Fundamental Mathematics II (3 Hours) Topics will include basic concepts of geometry, measurement, probability, data analysis and statistics, with an emphasis on reasoning, problem solving, and communication of mathematical ideas.  Prerequisite:  MAT 116.  

Course Description and Rationale:  
Please note that while this is a mathematics content course, not a pedagogy (methods) course, a variety of instructional strategies will be used in order to set an example for the students.  This course is a continuation of MAT 116 and designed for prospective teachers of mathematics in the elementary and middle school grades.  This course builds on the topics covered in MAT 116 by adding topics in algebra, geometry, probability, data analysis, and statistics.  

All mathematics courses at William Carey University are designed to give each student an insight into the nature of mathematics, to acquaint students with some of its fundamental principles, and to emphasize the cultural values of the arts and sciences.  Each course emphasizes critical thinking, problem solving, and the ability to communicate basic concepts orally and in writing.  In accordance with the mission of William Carey University, mathematics courses are provided in a Christian environment conducive to personal growth and the development of excellence in scholarship, leadership, and service.  

Learning Outcomes:  
The primary objective of the course is that students will learn basic concepts of algebra, graphs, functions, systems of equations, geometry, probability, data analysis and statistics.  In particular, after completing this course the student should be able to:  

- Apply Common Core State Standards for Mathematical Practice  
- Recall how to solve linear equations and inequalities in one variable.  
- Understand and be able to apply the concepts of ratio and proportion.  
- Understand and apply common and metric measurements and calculate area, perimeter, and volume.  
- Understand and apply the properties of exponents.  
- Use the quadratic formula and techniques of factoring to solve quadratic and other polynomial equation.  
- Understand graphs and the graphical representation of points and lines.  
- Understand the concept of a function and have familiarity with linear and polynomial functions.  
- Solve systems of 2 equations in 2 unknowns.  
- Understand the basic concepts of point, line, plane, polygon, and other geometric objects and use these concepts in spatial reasoning.  
- Use and explain basic ideas in probability such as how permutations and combinations are used.  
- Analyze and represent data using a variety of graphs and use mean, median, and mode in data analysis.  
- Use the geometry of the triangle in mathematical applications.  
- Understand and apply the basic trigonometric functions to right triangles.  
- Prepare and submit a portfolio which displays a knowledge of the basic concepts of mathematics, which demonstrates connections among key concepts, and which clearly exhibits reasoning, problem solving, and an ability to communicate mathematically (see course requirements)
Course Requirements:
The student is expected to:
1. Attend and participate in all class sessions. Students must attend at least 75% of the classes in order to receive credit for the course (see catalog).
2. Read the text and other related reading assignments.
3. Maintain a daily log of notes, handouts, and assignments.
   a. Keep a notebook which includes all work done on homework assignments arranged systematically and written in a legible style. This notebook may be checked at any time during the trimester.
   b. All notes, handouts, and assignments should be dated.
4. Provide a scientific calculator to use throughout the class.
5. Complete and turn in all assignments when due.
   a. All assignments are due at the beginning of class.
   b. Work turned in late may be subject to a penalty.
   c. Exams should not be missed. However, if you must miss an exam due to extreme illness or death in the immediate family, the instructor must be notified as soon as possible. Exams missed without notification will be assigned a grade of zero. If the instructor is notified in advance, a make-up exam may be scheduled at the instructor’s discretion.
   d. Any student who will miss a test because of an official University function, must notify the instructor to reschedule and take the test BEFORE the test is scheduled to be given.
6. Take a diagnostic test at the beginning of the term.
7. Be diligent and thorough in doing all homework assignments and in preparing for all tests given in the course.
8. Take and pass three scheduled tests and the final exam. PLEASE NOTE THAT THE FINAL EXAMINATION WILL BE COMPREHENSIVE.
9. Demonstrate proficiency in paper and pencil methods and in using a calculator; select the appropriate tool for a given situation.
10. Prepare a portfolio that represents student progress in problem solving and in communicating the basic ideas of mathematics during the course. The goal is to prepare a portfolio which displays an increased knowledge of the basic concepts of mathematics, which demonstrates that the student can make connections among the key concepts, and which clearly exhibits reasoning, problem solving and an ability to communicate mathematically.

Tentative Schedule
Week 1: Diagnostic test; review solving linear equations and their applications; review ratio and proportion; solve linear inequalities
Week 2: Properties of exponents; polynomials and factoring; quadratic equations and applications
Week 3: Rectangular coordinate system; lines, slope, and average rate of change
   TEST 1
Week 4: Forms of linear equations; introduction to functions (linear and quadratic)
Week 5: Systems of equations; basic concepts of geometry: points, lines, planes, and angles; curves, polygons, and circles
Week 6: Congruence, similarity, and the Pythagorean Theorem
   TEST 2
Week 7: Perimeter, area, and circumference; volume and surface area
Week 8: Basic concepts of statistics/data analysis; basic concepts of trigonometry
Week 9: Submission of portfolio; submission of review question answers
   TEST 3
Week 10: FINAL EXAM

Teaching Methods:
A variety of teaching methods are used to accomplish the class objectives: lecture and demonstration, modeling using manipulatives and visuals, use of activities designed to improve students’ ability to read, write, and communicate orally about mathematics topics, and the use of cooperative learning in groups.
Evaluation Criteria

Students are expected to attend all class sessions and are responsible for contacting the instructor regarding any work missed due to unavoidable absences. Working in cooperative learning groups is encouraged. Extra credit points may be obtained through investigations of mathematical topics. Students with no absences will have 5 points added to their lowest daily grade. Students with only one absence will have 3 points added. A grade of zero will be assigned to missed tests unless other arrangements are made prior to the time of the test.

A percentage of possible points from the following sources will be calculated.

Daily grades (minimum of 500 points): homework, quizzes, class activities
- All assignments are due at the beginning of class.
- All assignments must have student name, date assigned and course number on the first page and on the outside when folded.
- The student name should be on each page of the assignment.
- Work should be shown on all assignments. The work must be done neatly and in order on your own paper. Answers should be on worksheets.

Class Participation (25 points) – Everyone begins with 25 points for class participation. Points will be deducted throughout the trimester as necessary for issues including but not limited to:
- Not being properly prepared for class, i.e. homework, materials – 1 point per incident
- Not participating in class discussions and activities – 1 point per incident
- Cell phone ringing/usage in class – 2 points per incident
- Disrespect of others in the class – 3 points per incident
- Talking while the instructor or another student is speaking – minimum of 1 point per incident

The instructor reserves the right to deduct participation points as she sees fit. Points deducted are not negotiable. When the instructor/student is speaking or sharing an activity, the entire class should participate and listen – whether or not they feel it is important to them. If you were standing in front of the room trying to share you wouldn’t want people talking or doing other things. Think of yourself when you are a teacher – are you going to allow students to work on other things, read, or talk while you are teaching?

Portfolio (100 points): Due the Thursday before the final
Section tests (minimum of 100 points each): given at the end of sections
Final examination (minimum of 200 points): Comprehensive

Grades will be assigned to the percentage grades according to the following scale:

A = 90-100%
B = 80-89
C = 70-79
D = 60-69
F = Below 60

STUDENTS ARE NOT ALLOWED TO SEND OR RECEIVE TELEPHONE CALLS OR TEXT MESSAGES DURING CLASS TIME. IF I SEE OR HEAR A PHONE AND I FEEL A PROBLEM HAS ARISEN, THEN YOU WILL BE ASKED TO LEAVE AND AN ABSENCE WILL BE GIVEN TO YOU FOR THAT CLASS. PLEASE RESPECT THE TEACHER, YOUR CLASSMATES, AND YOURSELF!!

Materials:
- Pencil, paper, scientific calculator, and notebook.
  All work done in this class must be done in pencil!!
AMERICANS WITH DISABILITIES ACT

Students with disabilities who are protected by the Americans with Disabilities Act of 1990 and require special accommodations, should contact Ms. Valerie Bridgeforth at 601-318-6188. Ms. Bridgeforth is located in the Student Services Office in Lawrence Hall.

POLICY ON ACADEMIC INTEGRITY

William Carey University seeks to create an environment that encourages continued growth of moral and ethical values, which include personal honesty and mutual trust. The University places the highest value on academic integrity and regards any act of academic dishonesty as a serious offense. Academic dishonesty is considered unethical and in violation of William Carey University’s academic standards and Christian commitment. If such an incident occurs, students, faculty, and/or staff are obligated to initiate appropriate action. Depending upon the seriousness of the offense sanctions could include failure of the assignment, failure of the course, and could lead to suspension or dismissal from the university. A full explanation of the procedures for responding to instances of academic dishonesty is contained in the University’s Policies and Procedures manual and in the student handbook, The Lance.

DISASTER PLAN

In the event the operation of William Carey University is affected by a natural disaster (i.e., hurricane, tornado, widespread flu outbreak, etc.), the following procedures will be followed:

1. In the case of a closed campus with internet access, all courses will shift to D2L or e-mail delivery of assignments. Follow all assignments in the syllabus and/or posted online and send them via D2L or e-mail to your professor, at the direction of the professor.

2. In the case of a closed campus with no internet access, follow all syllabus directions for the completion of course assignments. Completed assignments should be packaged in due date order for delivery to the campus once the campus has reopened. These assignments may also be sent by mail in care of your professor.

3. Students should check WCU’s web page (www.wmcarey.edu) and contact the professor by e-mail or phone: Email: jbower@wmcarey.edu phone: 601-990-8241 for additional instructions.