COURSE DESCRIPTION
FUNDAMENTAL MATHEMATICS I
MAT 116–10
WINTER 2013

DEPARTMENT OF MATHEMATICS
WILLIAM CAREY UNIVERSITY

Course Instructor: Dr. Jacob W. Chapman
Office: Green Science Hall, Room 204
Email: jchapman@wmcarey.edu
Office Hours:
   Mon 3:00–6:00 PM,
   Tue 4:00–6:00 PM,
   Wed 10:15 AM–12:15 PM, 3:00–6:00 PM,
   Or by appointment

Meeting times: Tuesday, Thursday, 10:15 AM–12:15 PM
Meeting location: Green Science Hall, Room 227
Credits: Three hours
Textbook: Miller, Heeren, and Hornsby, Mathematical Ideas, 12th ed., Addison-Wesley (Pearson), 2012. We will use Chapters 1,2,3,5,6,7
A MyMathLab access code will be required for the course (more on this later).

Important dates:
First Day of Classes: November 11, 2013
MLK Holiday: January 20, 2014 (night classes still meet)
Last Day of Class: February 12, 2014
   Test I: Thursday, December 5, 2013 (Ch. 1-3)
   Test II: Thursday, January 16, 2014 (Ch. 5-6.3)
   Test III: Thursday, February 6, 2014 (Ch. 6.4-7)
(These dates are approximate and may be slightly shifted due to unforeseen circumstances.)
Final Exam: Thursday, February 13, 2014, 10:30 AM

Catalog Description:
MAT 116. Fundamental Mathematics I. In this course special attention is given to the nature of mathematics as well as to the structure and properties of the real number system. Topics include logical reasoning, problem solving, the real number system and its subsystems: natural numbers, integers, and rational numbers.
Course Description and Rationale:
The course is designed to meet the needs of prospective and in-service elementary
and middle school teachers. The course is also designed to serve the needs of liberal
arts students as it offers a practical coverage that connects mathematics to the world
around us. While the use of scientific calculators will be allowed, pencil and paper
techniques will be emphasized.

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 mis-
sion 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.

Student Learning Outcomes:
The basic goal of this course is that every student will learn a common core
of material from topics in mathematics and discover the relevance of mathematics
to everyday life. Another objective is that each student will develop the thought
processes, problem solving skills, reasoning and communication skills, and the work
habits which will ensure success in future mathematics courses and in a future
career. In particular, after completing the course, the student should be able to:

- Apply the process of mathematical problem-solving (inductive/deductive
  reasoning and Polya’s strategies)
- Use the language of mathematics to express ideas precisely
- Perform set operations and find Cartesian products
- Investigate the basics of the study of logic: statements, quantifiers, and
  truth tables
- Apply concepts in number theory: prime/composite numbers, divisibility,
  GCF/LCM, Fibonacci sequence, Golden Ratio
- Define and identify natural numbers, whole numbers, integers, rational
  numbers, and irrational numbers
- Identify and apply properties of addition/multiplication for real numbers
- Perform the four basic operations on real numbers
- Solve applied problems involving percents
- Solve linear equations in one variable; use linear equations to solve appli-
cation problems
- Understand and be able to apply the concepts of ratio, proportion, and
  variation
Course policies: The student is expected to:
1. Attend and participate in all 19 class sessions. Students must attend at least 75% of the classes in order to receive credit for the course (see catalog). Coming to class late, leaving early, or sleeping in class will constitute a tardy, and two tardies will equal one absence. The student is responsible for knowing how many absences he or she is accruing.
2. Read the text, study the lecture notes, but most importantly, solve problems!
3. Bring a scientific calculator to use throughout the class.
4. Purchase a MyMathLab access code with which to gain access to the online homework system. The access code is required, but purchasing the textbook is optional, since the access code allows one to view an electronic version of the textbook online. The bookstore should have available both Book+Access Code packages, and Access Codes as standalone items.
5. Submit all assignments when due. Homework and quizzes may not be submitted late. Missed tests will be assigned a grade of zero. If notified in advance of an unavoidable absence, either the test may be taken in advance of the absence, or the missed test grade will be replaced by the final exam grade. Replacement of a second missed test by the final exam grade will be at the instructor’s discretion.

Tentative schedule:
Week 1: Diagnostic test; inductive/deductive reasoning; problem solving strategies; interpretation of graphs; Basic concepts of set theory: symbols/terminology
Week 2: Venn diagrams and subsets; set operations and Cartesian products; Introduction to logic: statements and quantifiers; truth tables; conditionals and related statements
Thanksgiving Break
Week 3: Review, TEST 1
Week 4: Number theory: prime/composite numbers; divisibility; GCF/LCM; Fibonacci sequence and Golden Ratio
Week 5: Real numbers: sets of real numbers; order and absolute value; operations on real numbers; order of operations; properties of real numbers; applications; rational numbers and decimal representations
Christmas Break
Week 6: Review, TEST 2
Week 7: Real numbers: irrational numbers; applications of decimals and percent
Week 8: Basic concepts of algebra: linear equations; applications of linear equations; ratio, proportion, and variation
Week 9: Review, TEST 3
Week 10: Review, 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.
Materials:
A scientific calculator is required. Using a pencil (rather than pen) is recommended for this class, unless you are somebody who never makes mistakes.

As already mentioned, a MyMathLab access code will be required in order to do the online homework.

Evaluation criteria:
Students are expected to attend all class sessions and are responsible for contacting the instructor regarding any work or important announcements missed due to unavoidable absences. Missed homework and quizzes may not be made up, since they may be done in the comfort of one’s home. A grade of zero will be assigned to missed tests unless other arrangements are made prior to test day. Student achievement will be assessed by the following measures:

- **Homework**: will be done online through Pearson’s MyMathLab. Students are required to obtain an access code in order to log in. One homework assignment will be due approximately every week and will be designed to help students further their understanding of topics covered in class. Various learning tools are available while working homework problems: for example, (i) **Help Me Solve This**: guides you through the current problem step by step, and gives you a different problem to try yourself; (ii) **View an Example**: allows you to view a different example which is worked out for you step by step in hopes that you can apply the same steps to your current problem. Homework problems may be attempted as many times as necessary to obtain a correct answer. Homework contributes 10% to the course average. Problems on tests are modeled after homework problems and quizzes. Staying on top of these assignments is therefore extremely important.

- **Quizzes**: Corresponding to each homework will be one online quiz designed to test students over the same skills used in homework, but without the learning tools available. This allows students to gauge whether or not they are ready to work problems in a test situation. Each quiz may be taken twice before its due date, and only the higher of the two grades will be taken. Quizzes contribute 10% to the course average.

- **Group work sessions**: We will have one group work session about every week in class where exercises are solved in small groups. Group problems are designed to not only show students how topics in class relate to real-world problems but also to enhance their skills at working together and communicating effectively in groups. Group work sessions contribute 10% to the course average and may not be made up if missed.

- **Three in-class tests**: Calculators may be used for tests, but they are not meant to be a substitute for thinking. Partial credit may be awarded for wrong answers on tests if you show your work. Each test will contribute 15% to the course average.

- **Comprehensive final exam**: The final exam contributes 25% to the course average.

Your final grade is determined according to the following table:

<table>
<thead>
<tr>
<th>Course average</th>
<th>Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A</td>
</tr>
<tr>
<td>80-89</td>
<td>B</td>
</tr>
<tr>
<td>70-79</td>
<td>C</td>
</tr>
<tr>
<td>60-69</td>
<td>D</td>
</tr>
<tr>
<td>0-59</td>
<td>F</td>
</tr>
</tbody>
</table>
Common Practices for Any Class:

- Please turn cell phones off or put them on silent. Do not text or talk on the phone during class. It is rude and distracts those around you.
- Putting your head on your desk resting or sleeping during class is disrespectful. If you need sleep, please go home—not to class.
- Please arrive for class a few minutes early so that class can begin without interruption. If there is a problem, let the instructor know.
- Regularly check your email for important announcements from your instructor. Students are responsible for information sent out via email.

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, or dismissal from the University. Complete procedural guidelines for dealing with incidents of academic dishonesty are on file in the Office of Student Services, the Office of Academic Affairs, each academic dean’s office, and each campus dean’s office.

Disaster Plan. In the event of closure or cancellations due to natural disaster or other emergency causes, general information will be forwarded to local media, posted on the WCU website http://wmcarey.edu, and sent via automated process to your WCU student email address. Specific information regarding the continuation of coursework will be posted on the university’s course management system at https://elearning.wmcarey.edu. For up-to-the-minute alerts regarding emergency situations, sign up to receive notifications through Sader-Watch, the WCU emergency message service. Sign-up instructions can be found at http://wmcarey.edu/saderwatch.

Theme. Our theme this year at William Carey is:

Registering for a Course in MyMathLab: You will need a MyMathLab access code in order to complete your homework assignments for this course. Please note: In addition to access to online homework, an access code also gives the student access to an eBook version of our textbook. If a physical copy of the textbook is desired, it would be a much better value to purchase the Book+Access Code package rather than buying a book and access code separately.

1. Go to www.mymathlab.com
2. Under Register, select Student.
3. Enter your instructor’s Course ID chapman53643, and click Continue.
4. If you already have a Pearson account, sign in with your username and password. If you do not already have an account, click Create. Write down your username and password so that you can remember them.
5. If you have a MyMathLab Access Code (which could either be purchased by itself or shrinkwrapped with the textbook), click Access Code and enter the code.
6. If you do not have a code, you may:
   (i) purchase one from our bookstore,
   (ii) purchase one online through Pearson using a credit card or PayPal, or
   (iii) select “Get temporary access without payment for 17 days.” This may be done, for example, for financial reasons, but note that access will be cut off after 17 days, until an access code is purchased.
7. Click “Go to your course” on the confirmation page. You can then click on our course and begin to do your work. Upcoming assignments that are due are shown on the home screen. Homework assignments and quizzes may also be found among the options on the left side of the screen.