



**ARIZONA
CHRISTIAN**
UNIVERSITY

Mathematical Concepts
MAT100

Course Name – Mathematical Concepts
Course Number – MAT100
Semester Offered – Spring 2012

Instructor Information:

Name - Dr. Warren Pettitt
Office location - SCI101
Office phone – 602-386-4119
Email address - warren.pettitt@arizonachristian.edu
Office hours – 8:30-9:30 and 10:30-11:30

Course meeting Days – T, Th
Course meeting Time – 9:00-10:15
Course meeting Place – SCI 106

Course Description:

This course is a study of the basic concepts of reasoning, number theory, elementary algebra, logic, and statistics.

Prerequisites: *Satisfactory score on the math placement test.*

Course Student Learning Outcomes:

Students will:

1. Understand the difference between inductive and deductive reasoning.
2. Develop a general method for problem solving.
3. Understand different systems of numeration.
4. Know how to do computations in other bases.
5. Understand the differences in integers, rational, irrational numbers and the real number system.
6. Know how to use exponents and scientific notation.
7. Know the order of operations and be able to use them successfully.
8. Understand basic formulas and how to rearrange them.
9. Know how to graph linear equalities and inequalities.
10. Know how to solve systems of equations.
11. Know how to use matrices to solve systems of equations.
12. Know basic terms and conversions in the metric system
13. Be able to work with length, area, volume, mass and temperature within the

- metric system.
14. Understand the following concepts of informal geometry – point, lines, planes, angles, polygons, perimeter, area and volume.
 15. Understand percent and how to use this concept in problem solving
 16. Understand simple interest and compound interest in relation to loans.
 17. Understand installment buying and home mortgage.

Texts and Resources: Required

A Survey of Mathematics with Applications by Angel, Abbott and Rhunde, 8th edition, Addison-Wesley Publishing, 2009. ISBN 0-321-50108-X

Course Schedule:

Week of	Topic	Chapter reading
Jan. 17 19	Inductive reasoning/estimation Problem solving	1:1 and 1:2 1:3
Jan. 24 26	Numeration systems Other bases and computation	4:1 and 4:2 4:3 and 4:4
Jan. 31 Feb. 2	Computational methods Exam 1	4:5
Feb. 7 9	Number theory and integers Rational and irrational numbers	5:1 and 5:2 5:3 and 5:4
Feb. 14 16	Real numbers and exponents Sequences	5:5 and 5:6 5:7 and 5:8
Feb. 21 23	Linear Inequalities/in 2 variables Systems of linear inequalities	6:6 and 6:8 7:5
Feb. 28 March 1	Linear programming Finish and Review	7:6
March 6 8	Exam 2 Metric system/area/volume	8:1 and 8:2
March 12-16	Spring Break	
March 20 22	Mass/Temperature/dim. analysis Statistics A	8:3 and 8:4 13:1 and 13:2
March 27 29	Statistics B Statistics C	13:3 and 13:4 13:5 and 13:6
April 3 5	Statistics D Finish and review	13:7 and 13:8
April 10 12	Exam 3 Logic and truth tables	3:1 and 3:2

April 17 19	Truth tables B/statements Percent/simple interest	3:3 and 3:4 11:1 and 11:2
April 24 26	Compound interest/installment buying Mortgages	11:3 and 11:4 11:5
May 1 3	Mortgages Review for final	
Week of May 8-11	<u>Finals</u>	

Assignments and Activities:

1:1 - 4,5,9,11,19,23,27,35,43,45	8:2 - 1-12 every 4 th one, 25-44 every 4 th one, and 51-56
1:2 - 2,7,13,21,27,30,31,34,37,41	8:3 - 19-52 every 4 th one and 62,63
1:3 - 3,6,9,14,19,26,28,37,42	8:4 - 9-24 every 3 rd one and 39,44,54,63
4:1 - 9,11,15,23,27,35,39,47,54	13:1 - 1-24 every 3 rd one
4:2 - 15,25,27,31,33,39,44	13:2 - 1-21 every 3 rd one
4:3 - 5,8,11,16,29,33,37,51	13:3 - 1,3,7,10,11,23
4:4 - 7,9,13,20,21,31,33,45,51	13:4 - 9,11,13,17,19,23
4:5 - 5,7,9,15,16,17	13:5 - 14,15,21,26,36
5:1 - 4,5,15,17,18,35,37,38,47,49,51	13:6 - 16,21,26
5:2 - 7-66 every 4 th one (7,11,etc)	13:7 - 1-48 every 4 th one and 51-54
5:3 - 13-88 every 5 th one (13,18,etc) and 107,111	13:8 - 15,23,43
5:4 - 9-78 every 5 th one	3:1 - 9-76 every 5 th one
5:5 - 9-16,29,41-68 every 4 th one	3:2 - 5-42 every 4 th one
5:6 - 13-96 every 5 th one and 108,112,118	3:3 - 7-56 every 5 th one
5:7 - 7-70 every 5 th one	3:4 - 9-30 every 4 th one
6:6 - 7-44 every 4 th one and 49	11:1 - 7-65 every 5 th one
6:8 - 3-24 every 4 th one and 25	11:2 - 9-24 every 4 th one and 26,27
7:5 - 3-18 every 4 th one	11:3 - 7,13,18,23
7:6 - 14,16	11:4 - 9,14,16
8:1 - 11-56 every 5 th one	11:5 - 11,13,16

Assessment and Grading:

The progress of each student will be evaluated by means of FOUR exams to be given during the semester, homework problems from the text, and unannounced quizzes.

The test days will be:

- Exam 1 - Feb. 2
- Exam 2 - March 6
- Exam 3 - April 10
- Exam 4 - Finals week

Letter Grades:

- A – 90% to 100%
- B – 80% to 89.5%
- C – 70% to 79.5%
- D – 60% to 69.5%
- F - < 60%

Expectations for Students:

1. Attend all lectures except in the case of illness or unforeseen emergencies. It is the student's responsibility to contact the instructor about any missed worked.
2. Be punctual.
3. Read over and take notes on the indicated chapters before they are presented in class. This activity mentally prepares one for the learning experience. It also is important because it raises questions that one needs to have answered in order to fully understand the concepts presented.
4. Homework should be a daily event, leaving it go to work on until just before a test is self-defeating. The homework is due when each exam is given.
5. Study about 2 hours for every hour in lecture.
6. Take exams on the scheduled dates. An automatic grade of zero is recorded for any exam missed.
7. Master the homework problems and turn them in on time. Most of the problems will NOT be accepted if there is only an answer given, you need to show the work.
8. Calculators may NOT be shared during exams.
9. An A on any test automatically gives you an A for the homework for those sections.
10. All phones should be turned off during class
11. Do not schedule any plane trips before finals are over, exams will not be altered for reasons of convenience.

Study Time: Most University courses require that students spend a significant amount of time outside of class in individual study time. A guideline is to spend 2 – 3 hours per week for every credit hour. This means that in a 3 credit course 6 – 9 hours of outside study per week would be expected at a minimum. The actual in-class meeting time is short in University courses because it is expected that students work independently outside of class in order to meet the course requirements.

Accommodation and Special Needs: Your instructor is willing to make any reasonable adaptations for limitations due to any disability, including learning disability, in keeping with ACU policies and the Student Handbook. Any student with documented certifiable special needs should contact the office of the Academic Advisor on campus and they will inform me of the proper accommodations you require. If you have a special need, even on a temporary basis, it is your responsibility to contact this office as soon as possible to disclose your disability information and discuss your accommodation needs. Students are required to make their requests in writing using the *Accommodation Request and Documentation Form* and document their disability in accordance with ACU policies and procedures. Documentation of

the disability must be current (not older than 1 year) and provided by a qualified health care professional such as a diagnosing or current physician, psychiatrist or psychologist. It must comply with the requirements for documentation outlined on the *Accommodation Request and Documentation Form*. Accommodations are not retroactive. ACU reserves the right to verify all professional documentation and determine reasonable accommodation for any disability, including learning disability. Please see the Student Handbook for current detailed information regarding accommodation and special needs.

Retention of Examinations and Assignments: Instructors will retain copies of student examinations and assignments not returned to students for one semester in case of dispute between a faculty member and a student in assigning or recording a grade. After that time, instructors may discard course materials in a manner that preserves student confidentiality.

E-mail Policy: Students are issued an official Arizona Christian University student email address when they are admitted to the University. These addresses all have the same form: firstname.lastname@arizonachristian.edu. This is the only electronic mailing address recognized by the University. Students are responsible for all official University communications, including attachments, transmitted to this address. ACU faculty and staff are not responsible for forwarding email to personal email accounts that are not assigned by the University. Students are required to check their ACU email on a daily basis.

Withdrawal:

Last day for withdrawal without instructor signature – February 3rd, 2012

Last day for withdrawal with instructor signature – March 23rd, 2012

References and Supplemental information: *None required*

Disclaimer note: This syllabus is subject to modification. The instructor will communicate with students any changes.