MTH223-01

Number Systems I

Fall 2021

Class Time and Location: M W 4:30 -5:45 S 245

Instructor: Marsha Jenkins, B.S.E. +18, Henderson State University
Office Location: Johnson Learning Commons 205
Office Hours: MW 8:00 – 12:30, 1:15 – 4:15
TR 9:00 – 12:30, 1:30 – 5:30
F 8:00 – 2:15
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Resources:
Text: *Mathematics for Elementary Teachers – A Contemporary Approach, 8th Edition,*
Musser, Burger, and Peterson, Copyright 2008. ISBN # 13 – 978 – 0470 – 10583 - 2

Required Materials:
TI-83 or 84 Calculator, 3-ring notebook with paper, cardboard folder, mechanical pencils with good erasers (no ink), small pack colored pencils, straight edge.

Course Description: This course emphasizes problem solving strategies for real-world applications appropriate for grades Pre-K through 8. Included is the development of concepts and operations of sets, whole numbers, and fractions; a study of other number bases and numeration systems; mental and written computation; and number theory. This course is designed to better prepare future elementary and middle school teachers.

Program Outcomes: The purpose of the Associate of Arts Program is to provide students with the knowledge and critical thinking skills that will enable students to analyze problems, arrive at intelligent conclusions, and make reasoned choices in their professional and personal lives.

- Students will demonstrate competency in mathematics, including analytical and occupational skills.
- Students will apply technological skills to process information.
- Students will be prepared to compete academically upon transfer to a four-year institution.

Rationale: An objective of post-secondary education is to provide a core of knowledge that is shared with most educated people. By studying and developing a deeper understanding of mathematical computations, students can better analyze, problem solve, and prepare critical thinking strategies for real world scenarios. Technological skills with the graphing calculator are necessary for future math courses.

Course Objectives: Upon successful completion of MTH 223 Number Systems I, the student should be able to:

1. Construct and explain concrete, pictorial, and abstract models for concepts and operations of sets, whole numbers, fractions, decimals, and percents
2. Solve real-world applications using numerous strategies.
3. Translate and perform operations in other number bases and numeration systems.
4. Identify and analyze number theory topics including primes, composites, factors, multiples, greatest common factor, and least common multiple.
5. Use thinking strategies to perform mental math, estimation, and non-standard algorithms.

Students will demonstrate mastery of the above objectives by grades of C or above on quizzes, tests, and final exam.

Topical Course Outline:

Chapter 1:	Introduction to Problem Solving	Weeks 1 – 2 8/16-8/30
	1.1 The Problem Solving Process and Strategies	
	1.2 Three Additional Strategies	
Chapter 2:	Sets, Whole Numbers, and Numeration	Weeks 3-5 9/1 – 9/22
	2.1 Sets as a Basis for Whole Numbers	No class on 9/6, Labor Day
	2.2 Whole Numbers and Numeration	
	2.3 The Hindu-Arabic System	
	2.4 Relations and Functions	
Chapter 3:	Whole Numbers: Operations and Properties	Weeks 6–8 9/27–10/11
	3.1 Addition and Subtraction	
	3.2 Multiplication and Division	
	3.3 Ordering and Exponents	
Chapter 4:	Whole Number Computation	Weeks 9-10 10/13-10/25
	4.1 Mental Math, Estimation, and Calculators	
	4.2 Written Algorithms for Whole-Number Operations	
	4.3 Algorithms in Other Bases	
Chapter 5:	Number Theory	Weeks 11-12 10/27 - 11/8
	5.1 Primes, Composites, and Tests for Divisibility	
	5.2 Counting Factors, Greatest Common Factor, and Least Common Multiple	
Chapter 6:	Fractions	Weeks 13-15 11/10-11/29
	6.1 The Sets of Fractions	No class on 11/24
	6.2 Fractions: Addition and Subtraction	
	6.3 Fractions: Multiplication and Division	
Review for final exam		12/1

Important Dates:

September 6 (M)	Labor Day holiday (No classes/offices open)
September 13 (M)	Four Week grades due UA Rich Mountain
October 11 (M)	Eight Week (Mid-term) grades due UA Rich Mountain
November 8 (M)	Twelve Week grades due UA Rich Mountain
November 24-26 (W-F)	Thanksgiving holidays (no classes/office open W)
December 3 (F)	Last day of classes/Last day to drop with a W
December 6-9 (M-Th)	Final Exams
December 10 (F)	Grades due UA Rich Mountain

Course Conduct: The class will be taught using a combination of lecture, group interaction, question and answer approach, and independent study. New topics will be demonstrated using the board, document camera with smart board, and many manipulatives to support development of concepts in a concrete fashion. Students are strongly encouraged to discuss concepts and examples as opportunities are presented during instructor presentation. It is the student's responsibility to inform the instructor when a concept is confusing or otherwise unclear.

UA Rich Mountain Credit Hour Calculator: For every course credit hour, you should expect to spend at least three clock hours per week of concentrated attention on course-related work, including but not limited to time attending class, as well as out-of-class time spent completing homework, seeking help from instructor or tutors, preparing for upcoming quizzes/tests/exam, reviewing material, problem solving, and organizing your notebook. For a three hour course, a typical student should expect to spend at least nine hours per week dedicated to this course. This includes the time spent in class. Please see credit hour calculator attached to end of syllabus.

Course Requirements / Evaluation (Grading):

Tests/Quizzes are 40% of your final grade. Six chapter tests are scheduled.

Daily Grades: Homework assignments, projects, and attendance are 40% of your final grade. Attendance is three points per class period with point(s) deducted for tardiness. Absences due to official school activities do not apply.

Criteria for Credit: Homework must be neat and complete. Each problem assigned has three parts: 1) the original problem complete with figures drawn, 2) <u>all steps or an explanation</u> of how to arrive at the correct answer, and 3) the final answer. ***Answers alone are not acceptable***. Use pencils and straight edge paper; no ink or ruffles please. Write the lesson topic at the top of the first page. Label each page with your name and lesson number in the top, right corner. Leave a blank line between problems. For immediate feedback, you may check your answers for most assigned problems in the back of the book. Box your correct answers as you check them. Find and correct any mistakes. *You will not receive credit for any problems not meeting the criteria for credit described above.*

Completed notes are to follow homework papers. The practice test is to follow the notes. The note taking guide and practice test must be complete for full credit as assignments.

Final Exam is 20% of your final grade. The final exam is comprehensive. Problems are similar to chapter test problems.

90 – 100 = A 80 – 89 = B 70 – 79 = C 60 – 69 = D 0 – 59 = F

Attendance / Make-up Policy: No make-up exams will be given. If you miss an exam, the missing grade will be replaced by the final exam score at the end of the course. Deliberately missing an exam is not advised due to the comprehensive nature of the final exam and the possibility of missing a future exam. Homework portfolios are due just before taking the exam. Late portfolios will be severely penalized. The student is responsible for instruction missed during class by studying the material in the book, seeking help from the teacher and/or student support services, and by getting class notes from the teacher or another student.

Cell Phones: The use of cell phones in the classroom is prohibited. Turn cell phone off or set on vibrate and store it out of sight during class time. If you are expecting an emergency call, please, notify instructor before class. If you receive the call, please, exit the classroom to take the call. You may return to the classroom after the call. During tests, cell phones will be in a basket in front of the classroom or stored away in student's belongings. See Academic Dishonesty paragraph.

Academic Dishonesty: Any suspicion of academic dishonesty will result in no credit for the paper in question. Having a cell pone in view during a test will result in a zero on the test.

COVID-19 Protocols: For your protection, and the protection of others, please adhere to the following COVID-19 protocols until further notice.

Face Mask Policy: As per the direction of the University of Arkansas Board of Trustees, all students are required to wear a proper face covering that completely covers the nose and mouth while on campus and in class. Masks with holes or masks that do not completely cover nose and mouth are not acceptable. Any student that does not have a proper mask will leave class and be referred to the Vice Chancellor for Student Affairs for possible disciplinary action.

Food and Drink: Food and drinks, including water are not allowed in the classroom at any time. This eliminates the need to remove masks and potentially expose others.

Attendance: Daily attendance is mandatory. In the event a student is quarantined, the student will automatically shift to an all-Zoom attendance format for the quarantine period. It is the student's responsibility to immediately notify the instructor if they will not be present for class, and a doctor's note is required. In the event the instructor is quarantined, the entire class will shift to an all-Zoom/online format for the quarantine period. Students will be notified accordingly. Any potential absence is to be shared with the instructor.

Technology Concerns: Students with access concerns are expected to communicate with their instructors. Additionally, students can access the wi-fi from the South parking lot

near the Ouachita Center. Students with access issues are encouraged to access course Zoom sessions from the parking lot, if needed. Students would be expected to drive to campus under normal classroom conditions. While it is not ideal, it does ensure reliable access and regular course participation. Students may use personal cell phones/devices to attend Zoom sessions. However, students have the option to check out campus computers from the library (Johnson Learning Commons).

Social Distancing: Students are to follow the social distancing guidelines as outlined by the Arkansas Department of Health (ADE), the Centers for Disease Control (CDC). And the UA Board of Directors. Additionally, UARM staff may clearly mark hallways, arrange classroom furniture, and remove keyboards from workstations to adhere to such guidelines. Students are asked not to assemble in the hallway before class. Please come to class when your class is scheduled to start. When leaving the classroom, students will be asked to exit in an orderly manner to allow social distancing between each person.

Seating arrangements: Students are not to sit at workstations where keyboards have been removed. Furthermore, due to contact-tracing regulations required by the ADE and CDC, students are to sit in the **same** seat/location **each** time they come to class.

Cleaning procedures: Students are expected to assist in keeping the classroom clean. Students are to clean their workstations each day upon entry and before leaving. Disinfecting wipes will be provided. Students are expected to wear gloves when using computers and keyboards, as these objects are more difficult to clean without damaging them. Gloves will be provided. To prevent cross-contamination, students are to remove and dispose of gloves upon leaving the classroom.

Computer and On-Campus Resources: Computer labs with printers are available in several places on campus including the Johnson Learning Commons. UA Rich Mountain offers students assistance with quality tutors available in the Student Support Services (SSS) in the Johnson Learning Commons. You may access www.tutor.com/uarichmountain nights and weekends when SSS is not available.

Disability Policy: It is the policy of UA Rich Mountain to accommodate students with disabilities, pursuant to state and federal law. Any student with a disability who needs accommodations should contact the Vice Chancellor for Student Affairs Office, 394-7622, ext. 1460.

Arkansas Clean Air Act: In compliance with the Arkansas Clean Air Act, UA Rich Mountain is a smoke and tobacco free facility. Students and guests are to refrain from the use of all tobacco products while on campus.

Student Misconduct: Students committing misconduct are subject to disciplinary sanction(s) and/or restrictions. Misconduct or prohibited behavior includes, but is not limited to endangerment, harassment, disruption, sexual misconduct, illegal drugs and/or alcohol, fire or safety issues, gambling, property violations, computer violations or other violations as listed in the UA Rich Mountain catalog.

UA Rich Mountain Mission: The University of Arkansas Rich Mountain provides transformative education to all learners.

Change: This syllabus is subject to change as deemed necessary by the instructor.

Credit Hour Requirement Calculator

Course Information				
Department, Course Number	Mathematics			MTH223
Course Title	Number Systems I			
Credit Hours	3			
Mode of Delivery	Traditional			
Weeks in Part of Term	15			
Level of Reading Material	Advanced/Scientific/Technical (2)			2
Reading Level of Students	Average Student (2)			2
Average Pages per Hour	11			

			Enter either week or term, not both	
Contact Hours		**Hours/Week**	**Hours/Term**	**Total Hours**
Lecture/Recitation			45	45
	Pages Asg'd	**Hours/Week**	**Hours/Term**	
Syllabus Items				
Weekly Homework Assignments		4		60
Prepare for Chapter Tests			12	12
Prepare for Final exam			4	4
Study Assigned Examples	87			7.9
				0
				0
				0
				0
				0
				0
Total Hours				128.9
Required Hours				112.5
Difference				Ok + 16.4