**MTH223-01**
**Number Systems I**
**Fall 2020**

**Class Time and Location:** M W 4:30 - 5:50 pm S 245

**Instructor:** Shannon Lyle M.ED Harding University
M.ED Henderson State University
B.S. Arkansas Tech University

**Online Hours**: I will periodically check Moodle and my email for any questions you may have pertaining to this class and will answer your questions as soon as possible. I encourage you to contact me at any time with any questions or concerns you may have about this class. I am available by appointment for individual conferences.
**Email**: slyle@uarichmountain.edu
**Cell phone**: 479-216-3673

**Co-requisite:** Math 203 College Algebra

**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:**
1 inch 3-ring notebook, college rule 3 hole paper, 4 notebook tab dividers, graph paper, pocket folder, mechanical pencils, and small pack colored pencils.

**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; number theory, statistics, probability, geometric shapes, problem solving, and measurement. 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, and fractions.
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 journal entries, projects, presentations, portfolio, and final exam.

**Tentative Course Outline:**

| **Week** | **Topics/Activities by Book Chapter** | **Date/Day** |
|---|---|---|
| 1 | Chapter 1: Introduction to Problem Solving<br>1.1 The Problem Solving Process and Strategies | 8/24 M<br>8/26 W |
| 2 | Chapter 1: 1.2 Three Additional Strategies | 8/31 M, 9/2 W |
| 3 | Chapter 2: 2.1 Sets as a Basis | 9/7 No class M, 9/9 W |
| 4 | Chapter 2: 2.2 Whole Numbers | 9/14 M, 9/16 W |
| 5 | Chapter 2: 2.3 The Hindu-Arabic System<br>2.4 Relations and Fun | 9/21 M<br>9/23 W |
| 6 | Chapter 3: 3.1 Addition and Subtraction | 9/28 M, 9/30 W |
| 7 | Chapter 3: 3.2 Multiplication and Division<br>3.3 Ordering and Exponents | 10/5 M<br>10/7 W |
| **8** | **Presentation 1 and Portfolio Due (Ch 1-3)** | **10/12 M, 10/14 W** |
| 9 | Chapter 4: 4.1 Mental Math, Estimation, and Calculators | 10/19 M, 10/21 W |

| | | |
|---|---|---|
| 10 | Chapter 4: 4.2 Written Algorithms for Whole-Number<br>4.3 Algorithms in Other Bases | 10/26 M<br>10/28 W |
| 11 | Chapter 5: 5.1 Primes, Composites, and Tests for Divisibility | 11/2 M, 11/4 W |
| 12 | Chapter 5: 5.2 Counting Factors, GCF and LCM | 11/9 M, 11/11 W |
| 13 | Chapter 6: 6.1 The Sets of Fractions<br>6.2 Fractions: Addition and Subtraction | 11/16 M<br>11/18 W |
| 14 | Chapter 6: 6.3 Fractions: Multiplication and Division<br>THANKSGIVING HOLIDAY | 11/23 M,<br>11/25 W -11/27 F |
| 15 | Chapter 6: Fractions: Review<br>Presentation 2 and Portfolio Due (Ch 4-6) | 11/30 M & 12/2 W<br>ONLINE |
| 16 | Finals week – Final Exam and Portfolio Due (Ch 1-6) | 12/7 M, 12/9 W |

**Important Dates:**

| | |
|---|---|
| September 7 (M) | Labor Day |
| September 14 (M) | Four Weeks grades due |
| October 12 (M) | Midterm grades due |
| November 9 (M) | Twelve Weeks grades due |
| November 25-27 (W-F) | Thanksgiving Holidays |
| December 4 (F) | Last day of classes/ last day to drop a class with a W |
| December 7-10 (M-Th) | Final Exams |
| December 11 (F) | Grades due |

**Course Conduct:** The class will be taught using a combination of group interaction, question and answer approach, lecture, 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.

You are encouraged to solve problems forming a study group and actively taking part in discussion. You may seek assistance from Student Support Services (SSS) or Learning Enrichment Advising Center (LEAC) to check the concepts in homework assignments, quizzes, and exam reviews but it is not the responsibility of SSS or LEAC to teach the entire lesson to complete your homework, neither can you directly ask for the answer. In case of extreme difficulty, you must inform me no later than two weeks after the class starts.

**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.

**Course Requirements / Evaluation (Grading):**

| Syllabus Items | # of Total Items | # of Points an Item | # of Total Points | # of hrs a Week/Total | # of hrs a Term/Total | % of Total Grade |
|---|---|---|---|---|---|---|
| *Attendance | | 3 | 100 | | | 10% |
| Journal Entries | 15 | 10 | 150 | 2 / 30 | | 15% |
| Homework | 10 | 10 | 100 | 4 / 40 | | 10% |
| Projects | 2 | 100 | 200 | | 10 / 20 | 20% |
| Presentations | 2 | 100 | 200 | | 10 / 20 | 20% |
| Final Portfolio | 1 | 150 | 150 | | 10 / 10 | 15% |
| Final Exam | 1 | 100 | 100 | | 4 / 4 | 10% |
| | | | **Total = 1000** | **Total = 124 hours** | | **100%** |

*Attendance will be counted as an additional grade, three points accumulating each class period for a total of 100 points. Absences due to official school activities do not apply.

**Criteria for Credit:** Work must be neat and complete. Each problem assigned has three parts: 1) the original problem complete with figures drawn, 2) all steps or an explanation 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 your name and the lesson topic and number at the top of the first page. Leave a blank line between problems. For immediate feedback, you may check your answers for most assigned problems in the back of the book. Find and correct any mistakes. *You will not receive credit for any problems not meeting the criteria for credit described above.*

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

**Class Procedures/Student Requirements:**
Students are expected to participate in class and contribute to their own learning. The student portal will be available for accessing needed documents.

**Attendance / Make-up Policy**: No make-up exam will be given. Course portfolios are due just before taking the exam. Late portfolios will be 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. ***Cell phones will be taken up during exams.***

**Academic Dishonesty**: I encourage you to familiarize yourself with UA Rich Mountain policies regarding academic dishonesty. These policies are found in the UA Rich Mountain Catalog under Code of Student Conduct; Prohibited Conduct; Dishonesty.
I have two additional requirements. **First**, you must do your own work. All projects, assignments, and exams must be completed by you without assistance beyond what is specifically authorized by me. I expect each student to do his/her own work on assignments and exams. Cheating on an assignment or test will result in a zero (0) for that work. Additionally, all instances of cheating/plagiarism will be reported to the Vice Chancellor for Student Affairs.
**Second**, when completing your written assignments, you are expected to properly document any borrowed material. Failure to do so will be considered plagiarism, and the assignment will receive a zero.

**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) and Learning Enrichment and Counseling Center (LEAC) 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, including e-cigarettes, 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, dishonesty, illegal drugs and/or alcohol, fire or safety issues, gambling, property violation, computer violations or other violations as listed in detail in the UA Rich Mountain catalog.

**Face Mask Policy**: As per the Executive Order from the governor of Arkansas, 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 the 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.

**UA Rich Mountain Mission**: UA Rich Mountain exists to provide exemplary educational and enrichment opportunities to improve the quality of life and standard of living.

Crime Statistics Link: UARM's crime statistics are available at http://www.uarichmountain.edu/at-a-glance/disclosures

*See Something ... Hear Something ... Say Something*

Suspicious behavior should be reported to Deputy Sheriff Raul Toribio at (479)394-6811 OR through the anonymous email link found on the UA Rich Mountain webpage, bottom right hand corner. Deputy Toribio's office is located in the Spencer Building across from the Johnson Learning Commons.