

***This is a SouthArk Master Syllabus. The course syllabus distributed by the instructor may include additional requirements, must be followed by the student in the given term, and is considered to supersede the Master Syllabus.***

**Course Number**

MATH 2123

**Course Title**

Math for Health Professionals

**Course Description**

Provides instruction in dosage calculation using dimensional analysis and other means of calculation related to medication. Topics include but are not limited to: interpretation of drug labels, syringe types, conversions, Roman numerals, reconstitution, mixing medications, IV flow rates, drip rates, interpretation of physician orders, transcribing to Medication Administration Records, dispensing, and proper documentation of medications. Three hours lecture. Prerequisite: Pass BSTD 0413 with a grade of "C" or better.

**College Mission**

South Arkansas Community College promotes excellence in learning, teaching, and service; provides lifelong educational opportunities; and serves as a cultural, intellectual, and economic resource for the community.

**College Wide Student Learner Outcomes**

Critical Thinking

Responsibility

Communication

ACTS Course

Program Course

**ACTS Outcomes**

**Program Outcomes**

**Course Learner Outcomes**

CLO #	Course Learner Outcomes (CLO)	Unit Outcomes/ Competencies	ACTS Outcomes	Program Outcomes	Critical Thinking	Communication	Responsibility	Assessment
CLO 1	Calculate problems involving fractions and ratios	1-3, 10-11			CT2			Comprehensive Final Exam
CLO 2	Compute decimal expressions and apply them to percentage calculations	4-9			CT2			Comprehensive Final Exam
CLO 3	Compute basic proportions and calculate conversions between units using proportions or dimensional analysis	12-16			CT2			Comprehensive Final Exam
CLO 4	Calculate problems of Oral and Parenteral dosages using proportions or dimensional analysis	17-20			CT2			Comprehensive Final Exam
CLO 5	Compute Intravenous calculations using drops/min and ml/hr	21-22			CT2			Comprehensive Final Exam

CLO 6	Calculate critical care flow rates using dimensional analysis and formula methods	23-28			CT1			Comprehensive Final Exam
CLO 7	Evaluate pediatric dosages based on child's weight	29-35			CT1			Comprehensive Final Exam

### Unit Outcomes/ Competencies/ Objectives

1. Convert improper fractions to mixed numbers and back.
2. Reduce fractions, complex fractions, and mixed numbers to equivalent fractions with the lowest common denominator.
3. Add, subtract, multiply, and divide fractions and mixed numbers.
4. Determine the place value of decimals and round to indicated place values.
5. Solve basic computations involving decimals.
6. Multiply and divide decimals by a multiple of 10 or 0.1.
7. Convert between fractions, decimals, and percents.
8. Compute what percent one number is of another.
9. Evaluate the given percent of a number.
10. Convert a proper fraction, decimal, and percent to a ratio reduced to lowest terms.
11. Convert a ratio to a proper fraction, decimal, and percent.
12. Evaluate simple proportion problems and calculate involving fractions, decimals, and percents.
13. Compute equivalents within the metric system by using proportions and dimensional analysis.
14. Calculate equivalents between the metric and household systems and within the apothecary systems of measure by using proportions and dimensional analysis.
15. Convert Arabic numerals to Roman numerals.
16. Convert between the Fahrenheit and Celsius scales.
17. Converting all measures within the problems to equivalent measures in one system of measurement.
18. Using proportion and dimensional analysis to solve problems of oral dosage involving tablets, capsules or liquid medications.
19. Using the stated formula as an alternative method of solving oral and parenteral dosage problem.
20. Using proportion and dimensional analysis to solve problems of parenteral dosages.
21. Calculating drops per minute (gtt/min) when given the total volume and time over which an IV solution or intravenous piggyback is to be infused.
22. Calculating milliliters per hour (ml/h) when given the total volume and time over which an IV solution or intravenous piggyback is to be infused.
23. Calculating the IV flow rate of medications in units per hour or international units per hour.
24. Calculating the units per hour of medications from the IV flow rate.
25. Calculating the IV flow rate of medications in units per kilogram per hour (weight-based heparin).
26. Calculating the IV flow rate of medications in milligrams and micrograms per minute.
27. Calculating the milligrams and micrograms per minute of medications from the IV flow rate.
28. Calculating the micrograms and milligrams per kilogram per minute of medications from the IV flow rate.
29. Converting the weight of a child from pounds to kilograms.
30. Performing pediatric dosage calculations.
31. Calculating the single or individual dose of medications.
32. Determining whether the prescribed dose is safe and therapeutic.
33. Calculating the single dose range from a 24-hour dosage range.
34. Determining whether the actual dosage (in milligrams per kilogram per 24 hours) is safe to administer.
35. Calculating pediatric IV solutions.

### Assessment Description(s)

A comprehensive final exam will be given at the end of the semester and will be worth 25% of a student's overall grade. Students must pass this final exam with a 90% or higher in order to pass the course. This exam will serve as an exit exam for mastery of this course. Students who do not take the final exam or do not pass the final exam with at least a 90% will receive an F for the course, no matter their semester average. Students will have two attempts to pass this exam.

The online sections of Math for Health Professionals will be required to take a proctored final exam either at SouthArk's Learning Center or at a testing center that has been pre-approved by the instructor. Online students will be required to email the instructor the week before exams – based on the due date on the semester schedule – with arrangements for the final exam proctoring center. Preferably, students will take this exam in SouthArk's Learning Center and will schedule a testing time by calling 870.864.7196. If, however, students live out of town or out of state, they can set up a testing site

at either a local library or a local college testing center. In the email to the instructor concerning the final exam, students need to state the proctoring site, the time scheduled for the exam, and a contact name and number for the site if it is a place other than SouthArk's Learning Center.

### **Materials and Technological Requirements**

Required Text: Ogden, Fluharty (2011). Calculation of Drug Dosages A Work Text (9th edition). St. Louis, MO: Elsevier.  
Calculators: Basic calculators only will be allowed for this course; however, students need to learn math computations with no calculator in order to prepare for the TEAS test.

### **Evaluation**

All students must complete assignments as directed by the instructor. Due to the severity of accurate dosage calculation and administration, *the student must master a score 90% or higher on all chapter exams as well as the final exam.* If a student does not master the exam on the first attempt, the student has 3 days to master the exam on the second attempt and move on. Inability to master an exam will cause a student to not satisfactorily complete the course. *Unit test grades will be determined based on the average of both attempts.*

Due Dates: NO late work will be accepted; a grade of zero "0" will be given if work is not turned in on time. If a student does not submit assigned written work or cannot master exams with a 90% or higher, then the student will not have met the course requirements and will not be allowed to progress through the course.

Students' grades will be determined based on the following: 60% unit tests, 25% final exam, 15% quizzes  
*Grading scale will be:* A = 93-100    B = 86-92    C = 80-85    Failing = < 80

### **Instructional Methodology**

Course content is presented through traditional classroom instruction or online module instruction for online students. Students are accountable for all materials assigned and for all activities related to the course, such as attendance and classroom participation. Students will need to regularly access Blackboard and to complete assigned readings, homework assignments (though grades will not be given for homework), and all course requirements. In order to pass this course, students must meet the attendance requirements as outlined in the Class Attendance Policy and master each unit test with a 90% or better. Class attendance for online students constitutes logging in to Blackboard and completing assigned work by the due dates given on the semester schedule.

Each module contains classroom instruction and examples, videos, unit quizzes, and unit tests. Even though homework is not taken for a grade, students are strongly encouraged to work practice problems in the textbook that correlate to classroom instruction. Adequately studying before each unit test will ensure mastery and will allow students to move forward in the course.

Unit quizzes are very similar to unit tests and have a time limit of one hour; students may take quizzes an unlimited amount of time. Once students have made at least a 90% on a practice quiz with no notes or book, they are ready to take the unit test. Quizzes will count as 15% of an overall grade, and the highest quiz grade will be kept. Therefore, if a student scores a 75%, 95%, and a 50% on a particular quiz, gradebook will record the 95% quiz grade for that unit.

Unit tests also have a time limit of one hour. Students will have two attempts to pass each test with a 90% or better. If they are unable to pass one of the two attempts with at least a 90%, students will be made inactive in the course and will need to withdraw by visiting SouthArk's Admissions department and completing a Withdrawal Form.

Unit test grades will be determined based on the average of both test attempts. Therefore, if a student scores a 90% on the first attempt and an 80% on the second attempt, gradebook will record an 85% test grade for that unit. Even though the recorded grade is below the required 90%, that student is able to continue in the course because one of the test attempts met the requirement.

Students should regularly check Blackboard for videos, practice quizzes and course averages. Students should also regularly check their SouthArk email accounts and Blackboard announcements for clarification and updates on class procedures and assignments.

Unit Quizzes -----15% (No mastery requirement)

Unit Tests -----60% (Must show mastery with a score of 90% on one attempt)

Comprehensive Exam-----25% (Must show mastery with a score of 90% on one attempt)

### **Class Attendance Policy**

Students are expected to attend all classes in which they are enrolled. If a student is absent from a class session, it is the student's responsibility to make arrangements to complete or make up any work missed. No make-up work for missed classes will be allowed without the approval of the instructor. Students who enroll late must assume all responsibility for work missed. Classes not attended as a result of late enrollment may be counted toward excessive absences. Students not attending the entire class period may be counted absent for that period. An instructor may drop students with a grade of "WE" if students have been absent for an excessive number of days. Warning letters will be sent to the students advising them of the consequences of nonattendance and urging them to contact their instructors immediately. Excessive absences are defined as follows:

### **Regular Semester**

Courses which meet once a week.....	2 absences
Courses that meet twice per week .....	3 absences
Courses that meet four times per week.....	5 absences

### **Summer Session**

Courses that meet four times per week in a five week session .....	3 absences
Courses which meet two evenings per week in a 10 week session.....	3 absences

Students enrolled in special programs or individualized instruction should contact their program director/instructor regarding specific attendance requirements for the program/course. Some of the selective-admission, health-science programs have specific criteria regarding attendance. Students are encouraged to refer to program policies in these matters.

### Jury Duty/Military/Official School Function

Scheduled absences are those that occur due to college-related activities or as a result of summons to jury duty or military duty. Classes missed as a result of scheduled absences will not be counted as excessive absences if the instructor is notified and provided documentation prior to the absence(s). Make-up work for scheduled absences will be at the discretion of the instructor.

In all instances, documentation must be provided to the instructor within 24 hours of receipt. Documentation should come from an appropriate party on letterhead or other official stationery with a signature and contact information. Documentation should list the corresponding dates of the leave.

### Medical leave

For medical-related absences, documentation must include written notice from the treating medical professional documenting time needed off related to medical reasons and time student may resume classes. The medical reason does not need to be listed on the documentation; the documentation must include only that there is a medical reason, the amount of time the student needs to be absent, and the time the student should be able to return to classes. Students who elect to work at home while on excused leave must meet with their instructors to make arrangements to do so. Working on coursework while on medical leave is not a requirement but can be requested by students. If students request that they be allowed to work at home while on an excused leave, the instructor will make every reasonable effort to ensure that the student is able to do so.

For students who have a medical condition necessitating time off or accommodation:

- 1) They may work at home on assignments if they choose to if on medical leave approved by a medical professional
- 2) Receive appropriate accommodations related to coursework (i.e., excused from labs with potentially harmful chemicals, have a larger desk, etc.)
- 3) Resume their studies where they left off once they return to classes
- 4) Be allowed to make up any missed work related to medical leave
- 5) Receive incompletes on their transcripts until coursework is completed, according to the incomplete grade contract.
- 6) Be given a reasonable time frame in which to complete missed coursework

### **Academic Honesty Policy**

Students enrolled at South Arkansas Community College are expected at all times to uphold standards of integrity. Students are expected to perform honestly and to work in every way possible to eliminate academic dishonesty. Academic dishonesty includes cheating and plagiarism, which are defined as follows:

- Cheating is an attempt to deceive the instructor in his/her effort to evaluate fairly an academic exercise. Cheating includes copying another student's homework, class work, or required project (in whole or in part) and/or presenting another's work as the student's own. Cheating also includes giving, receiving, offering, and/or soliciting information on a quiz, test, or examination.

- Plagiarism is the copying of any published work such as books, magazines, audiovisual programs, electronic media, and films or copying the theme or manuscript of another student. It is plagiarism when one uses direct quotations without proper credit or when one uses the ideas of another without giving proper credit. When three or more consecutive words are borrowed, the borrowing should be recognized by the use of quotation marks and proper parenthetical and bibliographic notations.

If, upon investigation, the instructor determines that the student is guilty of cheating or plagiarism, the following penalties will apply:

- The student will receive a penalty of no less than a zero on the work in question.
- The instructor will submit a Student Academic Misconduct Form, written report of the incident, to the appropriate dean.
- The dean will submit form to Vice President for Learning to determine disciplinary action.
- The Vice President for Learning will determine whether further disciplinary action will be taken.
- All decisions may be appealed for review through the college's academic appeals procedure.

### **Equal Opportunity-Affirmative Action Statement**

South Arkansas Community College does not discriminate on the basis of age, race, color, creed, gender, religion, marital status, veteran's status, national origin, disability, or sexual orientation in making decisions regarding employment, student admission, or other functions, operations, or activities.

### **Library Services**

Library Homepage: <http://southark.libguides.com/homepage> Library Contact: LibraryStaff@southark.edu or 870.864.7115

### **Procedures to Accommodate Students with Disabilities:**

If you need reasonable accommodations because of a disability, please report this to the Vice President of Student Services with proper documentation. . VPSS Contact: 870.875.7262

### **The Early Alert System**

In an effort to ensure student retention and success, South Arkansas Community College employs an Early Alert System to identify and support at-risk students as soon as possible in a given semester. The intent of Early Alert is to provide this assistance while there is still time to address behaviors or issues that have the potential of preventing students from completing their courses and degree plans. Students referred through the Early Alert System will be required to work on a corrective action plan with their student advising coach and to include attendance accountability and mandatory academic tutoring either in the academic division or in the Testing and Learning Center (TLC).

Once the Student Advising Coach has met with the referred student, and again when the student has met the prescribed corrective actions, the coach will update the Early Alert System so that the instructor is kept informed of the progress in resolving issues.

### **Behavioral Review Team**

At South Arkansas Community College (SouthArk), we are committed to proactive leadership in student wellbeing and campus safety. By focusing on prevention and early intervention with campus situations that involve any person experiencing distress or engaging in harmful or disruptive behaviors, the BRT will serve as the coordinating hub of existing resources to develop intervention and support strategies and offer case management. Students, faculty, staff, and campus guests are encouraged to report any person on campus who is a concern. BRT Contact: 870.875.7262 BRT@southark.edu

**Date of Revision: 8/16/2016**