WISCONSIN INDIANHEAD TECHNICAL COLLEGE

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Wisconsin Indianhead Technical College

10804138 Math for Health Professionals

Course Outcome Summary

Course Information

Description	Following an arithmetic review, this course emphasizes those mathematical skills necessary for success in the nursing field and related health occupations. Emphasis will be placed on computational skills and applications of rational numbers; problem solving skills with ratios, proportions, and percents; basic principles and application of algebra, graphing, and statistics; measurement skills in U.S. Customary and Metric systems as well as apothecary and household systems; and the use of calculators as a tool.
Instructional Level	Associate Degree
Total Credits	2.00
Total Hours	32.00

Types of Instruction

Instruction Type	Credits/Hours
Classroom Presentation (Lecture/Demonstration/Discussion)	2/32

Course History

Revised By	Andrea Schullo (andrea.schullo)

Target Population

The target population for this course is those students entered in an Associate Degree or Vocational Diploma program in the health area. Any student interested in developing the math skills necessary to calculate dosages in the health occupations field would benefit from this course.

Pre/Corequisites

Prerequisite   Successful scores on placement test or 10834109 Pre-Algebra

Course Competencies

1.   Perform operations with fractional numbers
Domain   Cognitive   *Level*   Applying   *Status*   Active

Assessment Strategies
1.1.   using tools for learning such as the computer, books, manuals, and community resources

1.2.   individually and in group work
1.3.   on assignments and quizzes
1.4.   on a classroom test

Criteria

Criteria - Performance will be satisfactory when:

1.1.   solutions to problems are within stated range and reflect appropriate accuracy or precision
1.2.   learner performs operations with fractional numbers
1.3.   learner solves application problems using fractional numbers

Learning Objectives
1.a.   Review the rules and procedures for working with fractional numbers
1.b.   Review the rules and procedures for adding, subtracting, multiplying, and dividing fractional numbers
1.c.   Perform several arithmetic operations in the proper order of operations
1.d.   Add fractional numbers
1.e.   Subtract fractional numbers
1.f.   Multiply fractional numbers
1.g.   Divide fractional numbers
1.h.   Choose the correct operation for solving an application problem
1.i.   Solve an applied problem involving fractional numbers
1.j.   Use a calculator to facilitate work with fractional numbers

2.   Perform operations with decimal numbers
Domain   Cognitive   Level   Applying   Status   Active

Assessment Strategies
2.1.   using tools for learning such as the computer, books, manuals, and community resources
2.2.   individually and in group work
2.3.   on assignments and quizzes
2.4.   on a classroom test

Criteria

Criteria - Performance will be satisfactory when:

2.1.   solution to problems are within stated range and reflect appropriate accuracy or precision
2.2.   learner performs operations with decimal numbers
2.3.   learner solves application problems using decimal numbers
2.4.   learner solves problems accurately

Learning Objectives
2.a.   Review the rules and procedures for working with decimal numbers
2.b.   Review the rules and procedures for rounding off decimal numbers
2.c.   Perform arithmetic operations in the proper order of operations
2.d.   Add decimal numbers
2.e.   Subtract decimal numbers
2.f.   Multiply decimal numbers
2.g.   Divide decimal numbers
2.h.   Choose the correct operation for solving an application problem involving decimal numbers
2.i.   Solve an applied problem involving decimal numbers
2.j.   Use a calculator to facilitate work with decimal numbers
2.k.   Convert fractional numbers to decimal numbers
2.l.   Convert decimal numbers to fractional numbers

3.   Perform conversions among fractional, decimal, ratio, and percent form
Domain   Cognitive   Level   Applying   Status   Active

Assessment Strategies
3.1.   using tools for learning such as the calculator, computer, books, manuals, and community resources
3.2.   individually and in group work
3.3.   on assignments and quizzes

Criteria

Criteria - Performance will be satisfactory when:

3.1.   solutions to problems are within stated range and reflect appropriate accuracy or precision
3.2.   learner performs conversions among fractional, decimal, ratio, and percent form
3.3.   learner performs conversions between fractions and decimals
3.4.   learner performs conversions between fractions and percents
3.5.   learner performs conversions between decimals and percents

Learning Objectives

3.a.   Review the rules and procedures for conversion between fractional numbers and decimal numbers
3.b.   Express a fraction as a percent
3.c.   Express a decimal as a percent
3.d.   Express a fraction as a ratio
3.e.   Express a decimal number as a ratio
3.f.   Express a percent as a ratio

4.   Solve problems involving the use of fractions, decimals, and percents
Domain *Cognitive*   ***Level*** *Applying*   ***Status*** *Active*

Assessment Strategies

4.1.   using tools for learning such as the calculator, computer, books, manuals, and community resources
4.2.   individually and in group work
4.3.   on assignments and quizzes
4.4.   on a classroom test

Criteria

Criteria - Performance will be satisfactory when:

4.1.   solutions to problems are within stated range and reflect appropriate accuracy or precision
4.2.   learner follows instructions
4.3.   learner appropriately selects and uses tools for learning such as the calculator, computer, books, manuals, and community resources
4.4.   learner organizes information
4.5.   learner applies problem-solving steps
4.6.   learner analyzes information, ideas, and problems
4.7.   learner accurately solves problems involving the use of fractional numbers, decimal numbers, and percents

Learning Objectives

4.a.   Choose the correct operation for solving an application problem
4.b.   Solve an applied problem involving fractional numbers, decimal numbers, and percents
4.c.   Use tools to facilitate work with fractional numbers, decimal numbers, and percents

5.   Solve problems involving ratio and proportion
Domain *Cognitive*   ***Level*** *Applying*   ***Status*** *Active*

Assessment Strategies

5.1.   using tools for learning such as the calculator, computer, books, manuals, and community resources
5.2.   individually and in group work
5.3.   on assignments and quizzes
5.4.   on a classroom test

Criteria

Criteria - Performance will be satisfactory when:

5.1.   solutions to problems are within stated range and reflect appropriate accuracy or precision
5.2.   learner follows instructions
5.3.   learner appropriately selects and uses tools for learning such as the calculator, computer, books, manuals, and community resources
5.4.   learner organizes information
5.5.   learner applies problem-solving steps
5.6.   learner analyzes information, ideas, and problems
5.7.   learner applies logical reasoning in solving problems or dealing with information

Learning Objectives
5.a.   Use a ratio to compare two quantities
5.b.   Write a proportion
5.c.   Solve for a missing value in a proportion
5.d.   Solve applied problems involving proportions

6.   Convert among household, metric, and apothecary measure
Domain *Cognitive*   ***Level*** *Applying*   ***Status*** *Active*

Assessment Strategies
6.1.   using tools for learning such as the calculator, computer, books, manuals, and community resources
6.2.   with use of a conversion chart
6.3.   individually and in group work
6.4.   on assignments and quizzes
6.5.   on a classroom test

Criteria

Criteria - Performance will be satisfactory when:
6.1.   solutions to problems are within stated range and reflect appropriate accuracy or precision
6.2.   learner performs conversions among household, metric, and apothecary measure

Learning Objectives
6.a.   Identify the basic unit equivalences in the US Customary system for length, time, weight, and volume
6.b.   Convert from one unit of measure to another within the US Customary system
6.c.   Identify the basic unit equivalences in the Metric system for length, weight, and volume
6.d.   Identify from memory commonly used Metric prefixes
6.e.   Convert from one unit of measure to another within the Metric system
6.f.   Identify the basic unit equivalences in the household system of measurement
6.g.   Convert from one unit of measure to another within the Household system of measurement
6.h.   Identify the basic unit equivalences in the Apothecaries system of measurement
6.i.   Convert form one unit of measure to another within the Apothecaries system of measurement

7.   Solve medication dosage problems using proportions
Domain *Cognitive*   ***Level*** *Applying*   ***Status*** *Active*

Assessment Strategies
7.1.   using tools for learning such as the calculator, computer, books, manuals, and community resources
7.2.   with use of a conversion chart
7.3.   individually and in group work
7.4.   on assignments and quizzes
7.5.   on a classroom test

Criteria

Criteria - Performance will be satisfactory when:
7.1.   solutions to problems are within stated range and reflect appropriate accuracy or precision
7.2.   learner solves problems
7.3.   learner describes problems
7.4.   learner follows instructions
7.5.   learner organizes information
7.6.   learner applies problem-solving steps
7.7.   learner analyzes information, ideas, and problems

Learning Objectives
7.a.   Convert all measures within the problem to equivalent measures in one system of measurement
7.b.   Solve problems of dosage involving capsules, tablets, or liquid medications

8.   Solve linear equations in one unknown
Domain *Cognitive*   ***Level*** *Applying*   ***Status*** *Active*

Assessment Strategies

8.1.   individually and in group work
8.2.   on assignments and quizzes
8.3.   on a classroom test

Criteria

Criteria - Performance will be satisfactory when:

8.1.   solutions to problems are within stated range and reflect appropriate accuracy or precision
8.2.   learner organizes information
8.3.   learner applies problem-solving steps

Learning Objectives

8.a.   Define algebraic terminology: variable, term, coefficient, like terms, and equations
8.b.   Combine like terms containing a variable
8.c.   Solve equations using the addition, multiplication, or division properties of equations
8.d.   Use algebra as a problem-solving tool in an application problem

9.   Graph equations in two variables
Domain   Cognitive   Level   Applying   Status   Active

Assessment Strategies

9.1.   using a calculator
9.2.   individually and in groups
9.3.   on assignments and quizzes
9.4.   on a classroom test

Criteria

Your performance will be successful when:

9.1.   learner correctly graphs first-degree equations in two variables
9.2.   learner correctly graphs equations that are not linear
9.3.   learner solves applied problems by graphing

Learning Objectives

9.a.   Graph linear functions on the rectangular coordinate system
9.b.   Find the equation of a line given two points
9.c.   Find the equation of a line given slope and a point on the line
9.d.   Graph non-linear functions: quadratic, exponential, and polynomial
9.e.   Solve equations graphically

10.   Analyze data
Domain   Cognitive   Level   Analyzing   Status   Active

Assessment Strategies

10.1.   using a calculator
10.2.   individually and in groups
10.3.   given an experiment to complete
10.4.   on assignments and quizzes
10.5.   on a classroom test

Criteria

Your performance will be successful when:

10.1.   learner organizes data correctly using frequency distributions or stem-and-leaf plots
10.2.   learner correctly finds measures of central tendency (mean, median, and mode) for data sets
10.3.   learner correctly finds measures of dispersion (range, variance, and standard deviation) for given data sets
10.4.   learner constructs, reads, and interprets graphs correctly

Learning Objectives

10.a.   Construct a frequency distribution for a data set
10.b.   Interpret statistical graphs: stem-and-leaf plots, whisker diagrams, pie charts, bar charts, frequency polygrams, and line graphs
10.c.   Construct statistical graphs: stem-and-leaf plots, whisker diagrams, pie charts, bar charts, frequency

polygrams, and line graphs
10.d.   Calculate measures of central tendency: mean, median, mode, and mid-range
10.e.   Calculate measures of dispersion: range, standard deviation, and variance

Course Learning Plans and Performance Assessment Tasks

Type	Title	Source	Status
LP	Ratio and Proportion Assessment	Course	Active
LP	1. Operations with Fractional Numbers	Course	Active
LP	2. Operations with Decimal Numbers	Course	Active
LP	3. Percents and Conversions	Course	Active
LP	4. Problem solving with fractions, decimals, percents.	Course	Active
LP	5. Ratio and proportion	Course	Active