Western Technical College

10513113 QA Lab Math

Course Outcome Summary

Course Information

Description	This course focuses on performing the mathematical calculations routinely used in laboratory settings. You will explore the concepts of quality control and quality assurance in the laboratory.
Career Cluster	Health Science
Instructional Level	Associate Degree Courses
Total Credits	1
Total Hours	18

Textbooks

Mathematics for Clinical Laboratory - with Access. 4th Edition. Copyright 2021. Doucette, Lorraine J. Publisher: Elsevier Science. **ISBN-13**: 978-0-323-55482-4. Required.

Learner Supplies

Calculator - $10. **Vendor:** Campus Shop. Required.

Program Outcomes

1. Practice laboratory safety and regulatory compliance
2. Monitor and evaluate quality control in the laboratory

Course Competencies

1. Convert units of measurement

Assessment Strategies

1.1. by converting units of measurement given instructor provided problems.

Criteria

Your performance will be successful when:

1.1. you convert Fahrenheit units to centigrade
1.2. you convert centigrade to Fahrenheit
1.3. you convert within commonly used metric units

Learning Objectives

1.a. Utilize correct formula to convert english units to metric units and metric to english
1.b. Convert commonly used metric units: example grams to milligrams, milliliters to microliters
1.c. Utilize correct formula to convert Fahrenheit units to centigrade units and centigrade to Fahrenheit
1.d. Use correct abbreviations for all units

2. Calculate solutions and dilutions

Assessment Strategies

2.1. by calculating solutions and dilutions given instructor provided problems

Criteria

Your performance will be successful when:

2.1. calculations include a problem statement
2.2. calculations include each step in the process
2.3. calculations are legible and follow mathematical logic
2.4. calculations include answers with clearly labeled units of measurement
2.5. calculations include appropriate significant digits (numbers)
2.6. calculations are correct

Learning Objectives

2.a. Perform calculations for % solutions: % w/w, %v/v, % w/v
2.b. Perform calculations for molarity
2.c. Perform calculations for serial dilutions
2.d. Perform calculations for simple dilutions
2.e. Discuss uses of dilutions and solutions in the lab

3. Perform quality control calculations

Assessment Strategies

3.1. by performing calculations on problems provided by your instructor

Criteria

Your performance will be successful when:

3.1. you calculate mean
3.2. you calculate CV
3.3. you calculate standard deviation
3.4. you plot data on Levey-Jennings charts
3.5. calculations include each step in the process
3.6. you show your mathematical work for all steps in the process.
3.7. calculations are legible and follow mathematical logic
3.8. you apply mathematical logic.
3.9. calculations include answers with clearly labeled units of measurement
3.10. you include answers with clearly labeled units of measurement.
3.11. calculations include appropriate significant digits (numbers)
3.12. you include appropriate significant digits (numbers).
3.13. you calculate the correct solution/answer.
3.14. calculations are correct

Learning Objectives

3.a. Perform calculations for mean
3.b. Perform calculations for standard deviation

3.c. Perform calculations for coefficient of variation (CV)

4. Evaluate method selection

Assessment Strategies

4.1. Oral, Written and/or Skill Assessment

Criteria

4.1. you evaluate the data between different methods
4.2. you identify similarities and differences between items.
4.3. you select a method or instrument
4.4. you provide a rationale for selection
4.5. you compare important feature or attributes.
4.6. you recommend the method or instrument based on findings.

Learning Objectives

4.a. Describe the process for method comparison and evaluation
4.b. List common terms associated with method selection and evaluation
4.c. Select method or instrument based on predetermined data