APAV 53B: MEDICAL CALCULATIONS

Foothill College Course Outline of Record

Heading	Value
Units:	2
Hours:	24 lecture per quarter (24 total per quarter)
Prerequisite:	Per California Code of Regulations, this course is limited to students admitted to the Advanced Veterinary Assisting Apprenticeship Program.
Advisory:	Not open to students with credit in V T 53B.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	CSU
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

Description

Applied mathematics as a fundamental communication and technical skill. Review of calculations involving fractions, decimals, ratios and proportions, unit conversions, and algebraic equations. Clinical medical calculations utilized in preparation and administration of drugs, dosage determinations, intravenous fluid infusion, and prescription dispensing.

Course Objectives

The student will be able to:
A. Perform calculations involving ratios, proportions, and ratio fractions.
B. Perform conversions between decimals, fractions, ratios, and percentages.
C. Perform conversions between metric and household systems of measure.
D. Interpret oral and parenteral medication labels involving capsule and tablet strength dosages, oral solution concentrations, international units, milliequivalents, and weight-to-volume percentage concentrations.
E. Perform calculations relating percentage, ratio strength, and concentrations of solutions.
F. Perform calculations of dosages of drugs, and dispensing of drug quantities from dosage calculations.
G. Record drug administration information in medical records, such as patient records, controlled substances logs, anesthesia logs, and prescription labels.
H. Perform calculations involving intravenous preparations, including consideration of isotonicity, milliequivalents, percentage solutions, flow (drip) rates, and constant infusions.

Course Content

A. Review of basic mathematics
1. Mathematics of decimals and fractions
2. Solving simple algebraic equations
3. Ratios and proportions
B. Mathematic conversions
1. Decimals
2. Fractions
3. Ratios
4. Percentages
C. Systems of drug measure and unit conversions
1. Metric international system
2. Household system
3. Apothecary system no longer used, but may mention
D. Interpreting drug labels
1. Reading oral and parenteral medication labels
a. Strength dosage
b. Solution concentration
2. Hypodermic syringe measurement
3. Reconstitution of powdered drugs
E. Calculating solution dosages
1. Ratio and proportion method
2. Formula method
3. Insulin and heparin dosing
4. Solutions and dilutions
F. Following medication administration orders (drug dispensing)
1. Calculating drug dosages
2. Dispensing drugs based on interpretation and calculation of orders
G. Documentation
1. Patient records
2. Inventory
3. Logs
a. Anesthesia
b. Controlled substance
4. Prescription labels
H. Intravenous fluid therapy and critical care calculations
1. Intravenous fluid therapy principles and equipment
a. Tonicity
2. Intravenous flow rate calculations
3. Calculating constant rate infusions and infusion times

Lab Content

Not applicable.

Special Facilities and/or Equipment

Classroom with computer, internet, and visualizer. Software for auto-tutorial and interactive exercises in medical calculations. Various example drug products and dosage forms for demonstration. Fluid infusion equipment for demonstration purposes.

Method(s) of Evaluation

The student will demonstrate proficiency by:
A. Written examinations
B. Completion of self-study exercises
C. Midterm and final examinations

Method(s) of Instruction

During periods of instruction, the student will be in:
A. Lecture
B. Discussion
C. Cooperative learning exercises
D. Demonstration

Representative Text(s) and Other Materials

Williams, Lindsey. Clinical Mathematics for Veterinary Technicians. San Bernardino, CA: 2017. ISBN 978-15454-10462.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

A. Reading assignments

1. Weekly reading assignments from text and class handouts ranging from 30 to 60 pages per week

B. Writing assignments

1. Textbook and instructor created exercises for medical math calculations

2. Written short answer questions

Discipline(s)

Registered Veterinary Technician