

# V T 53B: MEDICAL CALCULATIONS FOR VETERINARY NURSES

## Foothill College Course Outline of Record

Heading	Value
<b>Units:</b>	2
<b>Hours:</b>	2 lecture per week (24 total per quarter)
<b>Advisory:</b>	Not open to students with credit in APAV 53B.
<b>Degree &amp; Credit Status:</b>	Degree-Applicable Credit Course
<b>Foothill GE:</b>	Non-GE
<b>Transferable:</b>	CSU
<b>Grade Type:</b>	Letter Grade Only
<b>Repeatability:</b>	Not Repeatable

## Student Learning Outcomes

- Demonstrate the knowledge and ability required to quickly and accurately calculate common drug dose calculations.
- Demonstrate the knowledge and ability required to quickly and accurately calculate common intravenous fluid dose and infusion rate calculations.

## 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. Intended for students in the Veterinary Technology Program; enrollment is limited to students accepted in the program.

## Course Objectives

The student will be able to:

- perform calculations involving ratios, proportions, and ratio fractions.
- perform conversions between decimals, fractions, ratios, and percentages.
- perform conversions between metric, apothecary, and avoirdupois systems of measure.
- interpret oral and parenteral medication labels involving capsule and tablet strength dosages, oral solution concentrations, international units, milliequivalents, and weight-to-volume percentage concentrations.
- perform calculations relating percentage, ratio strength, and concentrations of solutions.
- perform calculations of dosages of drugs, and dispensing of drug quantities from dosage calculations.
- record drug administration information in medical records, such as patient records, controlled substances logs, anesthesia logs, and prescription labels.
- perform calculations involving intravenous preparations, including consideration of isotonicity, milliequivalents, percentage solutions, flow rates, and constant infusions.

## Course Content

A combination of directed self-study of textbook and computer exercises, and classroom discussions will cover the following calculation techniques and skills:

- Review of basic mathematics
  - Mathematics of decimals and fractions
  - Solving simple algebraic equations
  - Ratios and proportions
  - Conversions between decimals, fractions, ratios, and percents
- Systems of drug measure and unit conversions
  - Metric international system; apothecary system; avoirdupois system
- Reading medication labels and syringe calibrations
  - Reading oral and parenteral medication labels
  - Hypodermic syringe measurement
  - Reconstitution of powdered drugs
- Calculating medication dosages
  - Ratio and proportion method
  - Formula method
  - Insulin and heparin dosing
  - Solutions and dilutions
- Medication administration orders and records
- Intravenous fluid therapy and critical care calculations
  - Intravenous fluid therapy principles and equipment
  - Intravenous flow rate calculations
  - Calculating constant rate infusions and infusion times

## Lab Content

Not applicable.

## Special Facilities and/or Equipment

- Classroom with multimedia capabilities for computer screen and CD-ROM projection.
- Software for auto-tutorial and interactive exercises in medical calculations.
- Various example drug products and dosage forms for demonstration.
- Fluid infusion equipment.

## Method(s) of Evaluation

- Written examinations
- Completion of textbook self-study exercises
- Completion of computerized autotutorials
- Emphasis is on skill development and hands-on experience in all required areas; practical training in the American Veterinary Medical Association Committee on Veterinary Technician Education and Activities List of Essential Skills Expected of Graduate Veterinary Technicians using a set of standard criteria as a guideline for the accomplishment of performance objectives

## Method(s) of Instruction

- Lecture
- Discussion
- Cooperative learning exercises
- Demonstration

## **Representative Text(s) and Other Materials**

Curren, Anna M. [Dimensional Analysis for Meds: Refocusing on Essential Metric Calculations](#). 5th ed. New York: Delmar Cengage Learning, 2019.

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

A. Weekly reading assignments from text, class handouts, and outside sources, ranging from 30-60 pages per week.

B. Textbook and CD exercises for medical math calculations.

C. Written short answer questions.

## **Discipline(s)**

Registered Veterinary Technician