# Course Outline

**Our Vision:** Rooted in our communities, we will be a globally recognized college delivering innovative learning opportunities and preparing career-ready graduates to be leaders in their fields.

**Mission:** We are dedicated to student success, academic excellence, and leadership in our communities.

**Land Acknowledgement:** St. Lawrence College is situated on the traditional lands of the Haudenosaunee and Anishinaabe People. May we always be grateful to live and learn on these lands.

## Biological Mathematics

## Course Information

**Course Code:** MATH 150

**Program(s):** Veterinary Technology

**Grade Type:** Graded: Yes G/NG:

**Credit Weight:** 3.0

**Total Course Hours:** 42

**Hours by Instructional Environment:** Class: 42 Lab: Field: Other:

**Pre-requisite(s):** None

**Co-Requisite(s):** None

**Course Equivalencies:** N/A

**PLAR:** Other

**Experiential Learning:** N/A

**Sustainability Development**: N/A

**Campus Dean/Associate Dean Signature of Approval:** _____

**Effective Date:** Fall 2024

## Course Description

This course is designed to provide the necessary scientific mathematical skills for students in the first semester of Veterinary Technology and Medical Laboratory Science Programs. Biological and laboratory applications are emphasized with topics including use of a scientific calculator, conversion of units, calculation of drug dosages, solutions, dilutions and nutritional requirements, dimensional analysis, absorption calculations, graphing of data, linear regression techniques, and us of algebra and logarithms in laboratory calculations and formulas.

## Course Learning Outcomes

At the conclusion of this course, learners will be able to:

| Ontario Qualifications Framework Category | Course Learning Outcomes |
|---|---|
| **Depth and Breadth of Knowledge** | 1. Convert measurements within the imperial and metric systems with and without the use of technology. |
| **Knowledge of Methodologies** | 2. Use foundational mathematical skills to support laboratory-based applications.<br>3. Calculate solution concentrations, drug dosages, and fluid delivery rates for veterinary applications. |
| **Application of Knowledge** | 4. Apply a variety of mathematical formulas and problem-solving techniques to solve clinical and laboratory problems.<br>5. Create standard curves and perform linear regression analysis to analyze and interpret scientific data. |
| **Communication Skills** | 6. Communicate laboratory procedures and clinical findings.<br>7. Use appropriate and relevant clinical and scientific terminology. |
| **Awareness of the Limits of Knowledge** | 8. Recognize when to use assistance, collaboration, and technology to solve math problems. |
| **Professional Capacity/Autonomy** | 9. Allocate time and resources efficiently to meet deadlines and achieve desired outcomes in a professional setting. |

## Relationship to Vocational /Program Specific Learning Outcomes

It is expected that all of the approved provincial outcomes (or those approved in the program proposal) will be achieved during the program. This course contributes to learning by supporting the achievement of the following identified (X) vocational/program learning outcomes:

| # | VLO/PLO Description | Assessed |
|---|---|---|
| 1 | Participate in facility management utilizing traditional and electronic media and appropriate veterinary medical terminology and abbreviations. | X |
| 2 | Communicate in a professional manner in all formats - written, oral, non-verbal, and electronic. | X |
| 3 | Follow and uphold applicable laws and the veterinary technology profession's ethical codes to provide high quality care to patients. | X |
| 4 | Safely and effectively administer prescribed drugs to patients. | X |
| 5 | Accurately dispense and explain prescribed drugs to clients. | |
| 6 | Demonstrate and perform patient assessment techniques in a variety of animal species. | |
| 7 | Understand and demonstrate husbandry, nutrition, therapeutic and dentistry techniques appropriate to various animal species. | |
| 8 | Safely and effectively manage patients in all phases of anesthetic procedures. | |
| 9 | Safely and effectively select, utilize, and maintain anesthetic delivery and monitoring instruments and equipment. | |

| | | |
|---|---|---|
| 10 | Understand and integrate all aspects of patient management for common surgical procedures in a variety of animal species. | |
| 11 | Understand and provide the appropriate instruments, supplies, and environment to maintain asepsis during surgical procedures. | |
| 12 | Demonstrate knowledge of proper handling, packaging, and storage of specimens for laboratory analysis to ensure safety of patients, clients, and staff. | |
| 13 | Properly perform analysis of laboratory specimens. | |
| 14 | Safely and effectively produce diagnostic radiographic and non-radiographic images. | |
| 15 | Safely and effectively handle common laboratory animals used in animal research. | |
| 16 | Understand the approach to providing safe and effective care for birds, reptiles, amphibians, guinea pigs, hamsters, gerbils, and ferrets. | |

*Table 1: Any VLO/PLO that is associated with this course must also be assessed.*

## Essential Employability Skills

It is expected that all 11 of the Essential Employability Skills will be addressed during the certificate, diploma, and advanced diploma programs. This course contributes to learning by providing assessed feedback on the following identified (X) essential employability skills.

| Type/Category | # | EES Description | Assessed |
|---|---|---|---|
| **Communication** | 1 | Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. | X |
| | 2 | Respond to written, spoken, or visual messages in a manner that ensures effective communication. | X |
| **Numeracy** | 3 | Execute mathematical operations accurately. | X |
| **Critical Thinking and Problem Solving** | 4 | Apply a systematic approach to solve problems. | X |
| | 5 | Use a variety of thinking skills to anticipate and solve problems. | X |
| **Information Management** | 6 | Locate, select, organize, and document information using appropriate technology and information systems. | X |
| | 7 | Analyze, evaluate, and apply relevant information from a variety of sources. | |
| **Interpersonal** | 8 | Show respect for the diverse opinions, values, belief systems, and contributions to others. | |
| | 9 | Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals. | |
| **Personal** | 10 | Manage the use of time and other resources to complete projects. | |
| | 11 | Take responsibility for one's own actions, decisions, and consequences. | |

*Table 2: Any EES that is associated with this course must also be assessed.*

## Course Learning Modules

The course will feature the following modules:

| Module Title | Module Topic(s) | CLO* | Learning Experiences | Resources |
|---|---|---|---|---|
| Fundamental Mathematical Skills | • Order of Operations and Fractions<br>• Percent Problems and Proportions<br>• Scientific Notation<br>• Measurement Systems<br>• Equations and Formula Manipulation | 1-2, 4, 6-9 | Direct Instruction<br>Demonstration<br>Hands-On Practice | Resources available on Blackboard |
| Solutions and Dilutions | • Molarity and PPM<br>• Solutions and Concentrations<br>• Dilutions and Serial Dilutions | 1-4, 6-9 | Direct Instruction<br>Demonstration<br>Hands-On Practice | Resources available on Blackboard |
| Clinical and Laboratory Techniques | • Drug Dosages<br>• IV Fluid Rates<br>• Linear Equations and Standard Curves<br>• Regression | 1-2, 4-9 | Direct Instruction<br>Demonstration<br>Hands-On Practice | Resources available on Blackboard |

**CLO: Course Learning Outcome*

## Assessment Plan

Students will demonstrate learning in the following diverse ways:

| Assessment Type | CLO* | VLO/PLO** | Description (e.g., format) |
|---|---|---|---|
| Self-Assessment | 1-9 | | Students will self-assess their knowledge on module topics. |
| Document | 1-9 | | Students will showcase skills learned throughout course modules. |
| Knowledge-Check | 1-9 | | Students will complete a knowledge check (quiz, test, exam, presentation, etc.) working within a specific time frame to demonstrate module concepts. |

**CLO: Course Learning Outcome; **VLO/PLO: Vocational Learning Outcome / Program Learning Outcome – refer to previous sections for more details.*

## College Policies and Procedures

It is important for learners to familiarize themselves with the Academic Policy Manual[1]. This manual contains information on College Policies and Procedures relating to the following:

- Rights and Responsibilities of Students
- Student Academic Appeal Procedure
- Grading/Assessment Description
- Progression Policy
- Program Specific Continuance and Readmission Policy
- Prior Learning and Assessment Recognition (PLAR)
- Attendance and Participation
- Acceptable Use Policy for Computing

## Academic Accommodations

St. Lawrence College is committed to creating a welcoming, barrier-free, inclusive learning environment, promoting integration and full participation. This commitment to Universal Design for Learning applies to all instructional settings (e.g., classroom, laboratory, online, placement, etc.), as well as to attitudinal beliefs. It is the policy of SLC to accommodate students with disabilities, ensuring equitable access to and benefits from educational opportunities, in accordance with the Ontario Human Rights Code.

The accommodation process is a shared responsibility. Students with disabilities seeking accommodations are asked to self-identify with Student Wellness & Accessibility[2] as early as possible to ensure timely development and implementation of appropriate accommodations.

Under provincial legislation, students are not required to provide diagnosis information, but rather, may be asked to provide information from a regulated health professional regarding functional limitations and accommodation needs, in order to provide appropriate supports. To maintain student privacy, this information is provided directly to Student Wellness & Accessibility. Once accommodation needs are determined, a member of the Student Wellness & Accessibility team will distribute an Accommodation Letter on your behalf electronically to all Professors identified within your academic schedule.

**Amended:** March 2023

### Use of Electronic Devices

The use of electronic devices used for communications and data storage during classes is at the discretion of the course professor. The professor identifies his/her policy on this under the Special Notes about this course section.

[1]https://www.stlawrencecollege.ca/about/college-reports-and-policies/academic-policies/
[2] https://www.stlawrencecollege.ca/campuses-and-services/services-and-facilities/student-wellness-and-accessibility/

## Email Account

All full-time students are provided with a St. Lawrence College email account. This is the only account that will be used by the college or your professors to communicate course or program information or college events. It is the responsibility of each learner to become familiar with and use the college email system.

## Grading System

The grading scheme is applicable to all graded courses at St. Lawrence College. All final grade submissions will be numeric representing a percentage score between 0 and 100 and will be converted to letter grades automatically by the student records system, as noted in the Academic Policy Manual[3].

## Maintaining Records

Learners are responsible for retaining the course outline and the current Academic Policy Manual for their records. It may be required for future use of applications for transfer credit to other programs or educational institutions.

[3] https://www.stlawrencecollege.ca/about/college-reports-and-policies/academic-policies/