

Mathematics 3012 SA

Vector Analysis, Spring 2026

Instructor: Dr. Luis Santiago

Email: lsantiag@lakeheadu.ca

Lectures/Labs: Monday to Friday from 12:30 PM to 3:30 PM in room RC1002.

Office hours: By appointment.

Recommended Textbooks: Any edition of the following:

- Calculus: Early Transcendentals, by Ron Larson and Bruce Edwards, (8th Edition Hardcopy \$148.95, <https://www.cengage.ca/c/calculus-early-transcendental-functions-8e-larson-edwards/9780357759325>), (Chancellor Paterson Library, Paterson Books - 4th floor; QA 303 L3274 2003).
- Multivariable Calculus by James Stewart, (9th Edition Hardcopy \$169.95, <https://www.cengage.ca/c/multivariable-calculus-9e-stewart-clegg-watson/9780357042922>), (Chancellor Paterson Library, Paterson Books - 4th floor ; QA 303 S845 2009 Metric Intl.).

Course Content: The course will cover the following topics: vectors and operations on vectors, space coordinates, lines, planes, surfaces, vector-valued functions and their differentiation and integration, tangent and normal vectors, functions of several variables, limits, continuity, partial derivatives of functions of several variables, tangent planes and normal lines, iterated integrals, double integrals, triple integrals, volume and surface areas, Jacobians, line integrals, Green's Theorem, surface integrals, Divergence Theorem, and Stokes' Theorem.

Labs: The lab will reinforce concepts through explanations and examples, as well as provide students with the opportunity to ask questions about the content given in class or assignment problems.

Grading Scheme:

Assignments	10 %
Midterm Exam 1 (Friday May 8 from 12:30 PM to 1:30 PM)	30 %
Midterm Exam 2 (Friday May 15 from 12:30 PM to 1:30 PM)	30 %
Final Exam (Tuesday May 26)	30 %

Assignments: Assignments will be collected and graded online using the free online homework system WebWork. A link to WebWork can be found on the d2l webpage of the course.

Accommodations: Lakehead University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please visit:

<http://studentaccessibility.lakeheadu.ca>

Important Dates: Please note the following important dates:

Thursday May 1, 2025:	First day of classes
Friday May 23, 2025:	Final day of classes
Monday May 15, 2025:	Final date to withdraw
Saturday May 26, 2025:	Examination Period
Sunday May 27, 2025:	Exam Contingency Date