

MATH 124 - Calculus and Vector Algebra for Kinesiology  
Fall 2017

**Instructor Information and Office Hours:** Posted on Learn.

**Syllabus:** Review of trigonometry and basic algebra. Introduction to vectors in 2- and 3-space: sums, addition, dot products, cross products and angles between vectors. Solving linear systems in two and three variables. Functions of a real variable: powers, rational functions, trigonometric, exponential and logarithmic functions, their properties. Intuitive discussion of limits and continuity. Derivatives of elementary functions, derivative rules; applications to curve sketching, optimization. Relationships between distance, velocity and acceleration. The definite integral, antiderivatives, the Fundamental Theorem of Calculus; change of variable; applications to area, centre of mass, work.

**Textbook:** The *recommended* textbook for the course is *Math 124 Calculus and Vector Algebra for Kinesiology*. It is available from the bookstore. Lecture notes will also be posted as well as practice problems, so it is not required that you buy the book.

**Course Website:** We will be using the Learn webpage ([learn.uwaterloo.ca](http://learn.uwaterloo.ca)) for the course. All relevant information can be found there.

**Grading:**

- Best 9 of 10 Tutorial Assignments: 15%
- Midterm Exam: 35%
- Final Exam 50%

**Tutorial Assignment Policy:** Each tutorial (starting the week of September 18th) will be devoted to a tutorial assignment. The questions you will need to solve will be given in the tutorial and you will submit your answers at the end to the TAs. These may be solved open book and you may work together with people around you and ask the TA questions. You MAY NOT use a laptop/tablet/phone (i.e. the internet) to help solve problems. Also, don't seek help from people across the room. To help prepare, practice problems and solutions will be posted one week in advance on the course Learn website.

**Privacy Policy:** Assignments will be given back in tutorial. Assignments not picked up in tutorial will be available during your instructor's office hours. Assignments not picked up by the 1st of February, 2018 will be destroyed.

**Midterm Exam:** Tuesday, October 17th from 6:00-8:00pm

**Final Exam:** There will be a registrar-scheduled final exam for the course. More info TBA.

**Missed examination policy.** For any missed examination, you must have a valid reason (for instance, illness) and appropriate supporting documentation (i.e. University of Waterloo Verification of Illness Form). A copy of these forms must be given to your instructor as soon as possible. Absence for the midterm test will then normally result in the weight being shifted to the final exam. There will be no deferred (make-up) midterm. Absence for the final exam may result in a grade of INC at the discretion of your instructor. To be considered for an INC, you must have a passing grade on the midterm test and a strong average over all assignments. (See <http://ugradcalendar.uwaterloo.ca/page/Regulations-Accommodations>)

## Tentative Course Schedule

WEEK 0:

- Friday September 8th – Chapter 2

WEEK 1 (No Tutorials, office hours begin):

- Monday September 11 – Chapter 2
- Wednesday September 13 – Section 3.1 & 3.3
- Friday September 15 – Section 3.3 & 3.4

WEEK 2 (Tutorial assignment 1 on chapter 2 and section 3.1):

- Monday September 18 – Section 3.4 & 3.5
- Wednesday September 20 – Section 4.1 & 4.2
- Friday September 22 – Section 4.2 & 4.3

WEEK 3 (Tutorial assignment 2 on sections 3.3, 3.4, 3.5, and 4.1):

- Monday September 25 – Section 4.3 & 4.4
- Wednesday September 27 – Section 5.1
- Friday September 29 – Section 5.2

WEEK 4 (Tutorial assignment 3 on sections 4.2, 4.3, 4.4, 5.1):

- Monday October 2 – Section 5.3
- Wednesday October 4 – Section 5.4
- Friday October 6 – Section 5.5

WEEK 5 (No Tutorials):

- Monday October 9 – Thanksgiving, University closed
- Wednesday October 11 – Reading Days, No Lecture (No Office Hours)
- Friday October 13 (Wednesday Schedule) – Section 6.1

WEEK 6 (Tutorial assignment 4 on sections 5.2, 5.3, 5.4, and 5.5):

- Monday October 16 – Section 6.2
- Wednesday October 18 – Section 6.3
- Friday October 20 – Section 6.4

WEEK 7 (Tutorial assignment 5 on sections 6.1, 6.2 and 6.3):

- Monday October 23 – Section 6.5
- Wednesday October 25 Section 6.6 (and implicit differentiation)
- Friday October 27 – Section 7.1

WEEK 8 (Tutorial assignment 6 on sections 6.4, 6.5, and 6.6):

- Monday October 30 – Section 7.2
- Wednesday November 1 – Applications of Differentiation (optimization and related rates)
- Friday November 3 – Section 7.3

WEEK 9 (Tutorial assignment 7 on applications of differentiation, 7.1, and 7.2):

- Monday November 6 – Section 7.4
- Wednesday November 8 – Section 8.1
- Friday November 10 – Section 8.2

WEEK 10 (Tutorial assignment 8 on sections 7.3, 7.4, and 8.1):

- Monday November 13 – Section 8.3
- Wednesday November 15 – Section 8.4
- Friday November 17 – Section 8.6

WEEK 11 (Tutorial assignment 9 on sections 8.2, 8.3, and 8.4):

- Monday November 20 – Applications of Integration
- Wednesday November 22 – Section 9.1
- Friday November 24 – Section 1.1 & 1.2

WEEK 12 (Tutorial assignment 10 on section 8.6, applications of integration, and 9.1):

- Monday November 27 – Section 1.2 & 1.3
- Wednesday November 29 – Section 1.3 & 1.4
- Friday December 1 – Section 1.4

WEEK 13 (Practice problems posted for chapter 1, not for marks):

- Monday December 4 – Review

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility.

[Check [www.uwaterloo.ca/academicintegrity/](http://www.uwaterloo.ca/academicintegrity/) for more information.]

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4, <http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm>. When in doubt please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity to avoid committing academic offenses and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the undergraduate associate dean. For information on categories of offenses and types of penalties, students should refer to Policy 71, Student Discipline, <http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm>.

For typical penalties check Guidelines for the Assessment of Penalties, <http://www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm>.

Appeals: A decision made or penalty imposed under Policy 70, Student Petitions and Grievances (other than a petition) or Policy 71, Student Discipline may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72, Student Appeals, <http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm>.

Note for students with disabilities: Access Ability Services, located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the Access Ability Services at the beginning of each academic term.