



THE UNIVERSITY OF BRITISH COLUMBIA

Irving K. Barber Faculty of Science
Okanagan Campus

Department of Computer Science, Mathematics, Physics and Statistics

MATH 200 001
CALCULUS III Credits 3
2021 (01) Winter Term 1

MWF 2:00 – 2:50 pm ART 366

Instructor:

Name: Edward Butz
Office: SCI 107
Phone: 250-807-9533
edward.butz@ubc.ca

Office Hours: By Appointment

Course Description:

MATH 200 Calculus III

Analytic geometry in two and three dimensions, partial and directional derivatives, chain rule, maxima and minima, second derivative test, Lagrange multipliers, multiple integrals with applications.

Credits: 3

Pre-reqs: [MATH 101](#).

Course Format:

3 Lecture Hours, 1 Hr Tutorial Lab weekly

Passing Criteria: Average of Tests, Assignments, Final Exam $\geq 50\%$

NOTE: Student must obtain 50% or more on Final Exam to pass the course

The final grade of a student who fails to obtain 50 % or more on the final exam will be the percentage of the obtained final exam mark.



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Required Materials:

Textbook: **Multivariable Calculus 8th edition**
McCallum, Hughes-Hallett, Gleason
Wiley: ISBN 978-1-119-86386-1
(WileyPLUS included)

OR

Digital: **WileyPLUS with permanent Ebook included**

Course Evaluation:

Midterm #1	20%	Fri Oct 8, 2021
Midterm #2	20%	Fri Nov 5, 2021
Assignments	15%	
Final	45%	
Total	100%	

Final grades will be based on the evaluations listed above and the final grade will be assigned according to the standardized grading system outlined in the UBC Okanagan Calendar.

Late Assignments: Assignments not submitted by the due date and time will receive a mark of zero.

Missed Tests: Students who are unable to attend a test will have the given test percentage transferred to their final exam percentage.



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Syllabus

12 FUNCTIONS OF SEVERAL VARIABLES

- 12.1 FUNCTIONS OF TWO VARIABLES
- 12.2 GRAPHS AND SURFACES
- 12.3 CONTOUR DIAGRAMS
- 12.4 LINEAR FUNCTIONS
- 12.5 FUNCTIONS OF THREE VARIABLES
- 12.6 LIMITS AND CONTINUITY

13 A FUNDAMENTAL TOOL: VECTORS

- 13.1 DISPLACEMENT VECTORS
- 13.2 VECTORS IN GENERAL
- 13.3 THE DOT PRODUCT
- 13.4 THE CROSS PRODUCT

14 DIFFERENTIATING FUNCTIONS OF SEVERAL VARIABLES

- 14.1 THE PARTIAL DERIVATIVE
- 14.2 COMPUTING PARTIAL DERIVATIVES ALGEBRAICALLY
- 14.3 LOCAL LINEARITY AND THE DIFFERENTIAL
- 14.4 GRADIENTS AND DIRECTIONAL DERIVATIVES IN THE PLANE
- 14.5 GRADIENTS AND DIRECTIONAL DERIVATIVES IN SPACE
- 14.6 THE CHAIN RULE
- 14.7 SECOND-ORDER PARTIAL DERIVATIVES
- 14.8 DIFFERENTIABILITY

15 OPTIMIZATION: LOCAL AND GLOBAL EXTREMA

- 15.1 CRITICAL POINTS: LOCAL EXTREMA AND SADDLE POINTS
- 15.2 OPTIMIZATION



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15.3 CONSTRAINED OPTIMIZATION: LAGRANGE MULTIPLIERS

16 INTEGRATING FUNCTIONS OF SEVERAL VARIABLES

16.1 THE DEFINITE INTEGRAL OF A FUNCTION OF TWO VARIABLES

16.2 ITERATED INTEGRALS

16.3 TRIPLE INTEGRALS

16.4 DOUBLE INTEGRALS IN POLAR COORDINATES

16.5 INTEGRALS IN CYLINDRICAL AND SPHERICAL COORDINATES

16.6 APPLICATIONS OF INTEGRATION TO PROBABILITY

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Grievances and Complaints Procedures

A student who has a complaint related to this course should follow the procedures summarized below:



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- The student should attempt to resolve the matter with the instructor first. Students may talk first to someone other than the instructor if they do not feel, for whatever reason, that they can directly approach the instructor.
- If the complaint is not resolved to the student's satisfaction, the student should go to the departmental chair John Braun at SCI 388, 807-8032 or e-mail him at john.braun@ubc.ca.

Academic Integrity

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic

integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. **For example, incidences of plagiarism or cheating usually result in a failing grade or mark of zero on the assignment or in the course.** Careful records are kept to monitor and prevent recidivism.

A more detailed description of academic integrity, including the policies and procedures, may be found: <http://okanagan.students.ubc.ca/calendar/index.cfm?tree=3,54,111,0>

If you have any questions about how academic integrity applies to this course, please consult with your professor.

Grading Practices

Faculties, departments, and schools reserve the right to scale grades in order to maintain equity among sections and conformity to University, faculty, department, or school norms. Students should therefore note that an unofficial grade given by an instructor might be changed by the faculty, department, or school. Grades are not official until they appear on a student's academic record.

<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,41,90,1014> If you have any questions about how academic integrity applies to this course, please consult with your professor.

Disability Assistance

The Disability Resource Centre ensures educational equity for students with disabilities, injuries or illness. If you are disabled, have an injury or illness and require academic accommodations to meet the



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course objectives, visit our website for more information: <http://students.ok.ubc.ca/drc/welcome.html>
or contact the DRC at: drc.questions@ubc.ca

Equity, Human Rights, Discrimination and Harassment

UBC Okanagan is a place where every student, staff and faculty member should be able to study and work in an environment that is free from human rights based discrimination and harassment. If you require assistance related to an issue of equity, discrimination or harassment, please contact the Equity Office, your administrative head of unit, and/or your unit's equity representative.

UBC Okanagan Equity Advisor: ph. 250-807-9291;

E-mail: equity.ubco@ubc.ca

Web: <https://equity.ok.ubc.ca/>

Health & Wellness

At UBC Okanagan health services to students are provided by Health and Wellness. Nurses, physicians and counsellors provide health care and counselling related to physical health, emotional/mental health and sexual/reproductive health concerns. As well, health promotion, education and research activities are provided to the campus community. If you require assistance with your health, please contact Health and Wellness for more information or to book an appointment.

UNC 337

Email: healthwellness.okanagan@ubc.ca

Web: www.students.ok.ubc.ca/health-wellness

Sexual Violence Prevention and Response Office (SVPRO)

A safe and confidential place for UBC students, staff and faculty who have experienced sexual violence regardless of when or where it took place. Just want to talk? We are here to listen and help you explore your options. We can help you find a safe place to stay, explain your reporting options (UBC or police), accompany you to the hospital, or support you with academic accommodations. You have the right to choose what happens next. We support your decision, whatever you decide. Visit svpro.ok.ubc.ca or call us at 250.807.9640

Independent Investigations Office (IIO)

If you or someone you know has experienced sexual assault or some other form of sexual misconduct by a UBC community member and you want the Independent Investigations Office (IIO) at UBC to



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investigate, please contact the **IIO**. *Investigations are conducted in a trauma informed, confidential and respectful manner in accordance with the principles of procedural fairness.* You can report your experience directly to the **IIO** via email: director.of.investigations@ubc.ca or by calling 604.827.2060 or online by visiting investigationsoffice.ubc.ca

The Hub

The Student Learning Hub (LIB 237) is your go-to resource for free math, science, writing, and language learning support. The Hub welcomes undergraduate students from all disciplines and year levels to access a range of supports that include **tutoring in math, sciences, languages, and writing, as well as help with study skills and learning strategies**. For more information, please visit the Hub's website (<https://students.ok.ubc.ca/student-learning-hub/>) or call 250-807-9185.

SAFEWALK

Don't want to walk alone at night? Not too sure how to get somewhere on campus?

Call Safewalk at 250-807-8076.

For more information: <https://security.ok.ubc.ca/safewalk/> or download the UBC SAFE – Okanagan app.

Cooperation vs. Cheating

Working with others on assignments is a good way to learn the material and we encourage it. However, there are limits to the degree of cooperation that we will permit. Any level of cooperation beyond what is permitted is considered cheating.

When working on programming assignments, you must work only with others whose understanding of the material is approximately equal to yours. In this situation, working together to find a good approach for solving a programming problem is cooperation; listening while someone dictates a solution is cheating. You must limit collaboration to a high-level discussion of solution strategies, and stop short of actually writing down a group answer. Anything that you hand in, whether it is a written problem or a computer program, must be written by you, from scratch, in your own words. If you base your solution on any other written solution, you are cheating. If you provide your solution for others to use, you are also cheating.



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Final Examinations

The examination period for this term will be December 11 – 22, 2021. Students will be permitted to apply for out-of-time final examinations only if they are representing the University, the province, or the country in a competition or performance; serving in the Canadian military; observing a religious rite; working to support themselves or their family; or caring for a family member. Unforeseen events include (but may not be limited to) the following: ill health or other personal challenges that arise during a term and changes in the requirements of an ongoing job. An examination hardship is defined as the occurrence of an examination candidate being faced with three (3) or more formal examinations scheduled within a 27-hour (inclusive) period.

Further information on **Academic Concession** can be found under **Policies and Regulation in the Okanagan Academic Calendar** <http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,48,0,0>