

MATH 272-001 MULTIVARIABLE CALCULUS 1
SPRING 2019 (Mar 26 – May 31)
MTWThF 1 - 1:50 pm in SAMUELSON 245

Instructor: Dr. Sooie-Hoe Loke
E-mail: SooieHoe.Loke@cwu.edu
Phone: (509) 963-2602

Office: Samuelson 218H
Office Hours: MWF 12 – 1pm, and by appointment.

Required Text: Jon Rogawski and Colin Adams, Calculus: Early Transcendentals (3rd Edition). W.H. Freeman & Company (2015). We will cover material from Chapters 10, 12, 13, and 14.

Learning outcomes: Upon successful completion of this course, a student will be able to:

- Distinguish between sequences and series and determine when sequences converge or diverge, and what they converge to
- Compute partial sums
- Identify a geometric series, and, if it converges, compute its sum
- Apply various tests for convergence (integral, comparison, ratio)
- Determine the interval of convergence for a power series
- Find the Taylor Polynomial of degree n and the Taylor Series representation for a function
- Differentiate and integrate Taylor Series
- Perform algebraic computations involving vectors including finding
 - Magnitude of a vector
 - A unit vector that points in the same direction as a given vector
 - Dot product of two vectors
 - Cross product of two vectors
 - Vector projections
- Utilize the dot and cross product to
 - Answer questions about orthogonality
 - Compute work
 - Find the equation of a plane given 3 points on the plane, or a plane perpendicular to a given vector through a given point
 - Compute areas and volumes
- Describe and recognize graphs of functions of two variables
- Determine limiting and continuity properties of functions
- Compute partial derivatives, differentials, gradients and directional derivatives
- Geometrically interpret the gradient with respect to a contour diagram
- Find equations of tangent planes
- Find extrema
- Communicate verbally and in writing one's understanding of mathematical concepts to others

Course Assessment: Your overall grade will be determined by the following:

- Homework: 20%
- Quizzes: 15%
- Three Midterm Exams: 40%; tentative dates: April 17, May 8, and May 29 (all Wednesdays)
- Final Exam: 25%; given Thursday, June 6, from 12 - 2pm

Course grades will be assigned based upon the following scale:

93-100%=A 90-92.9%=A- 87-89.9%=B+ 83-86.9%=B 80-82.9%=B- 77-79.9%=C+ 73-76.9%=C
70-72.9%=C- 67-69.9%=D+ 63-66.9%=D 60-62.9%=D- below 60%=F

Calculator: A calculator (scientific or graphing) is required. Please bring your calculator to each class meeting. You are not allowed to use other electronic devices (cellphone, etc.) as a calculator.

Homework: There will be two types of homework for this class. The first type consists of problems from the book and will be posted on Canvas. You are encouraged to do these problems before attempting the other type of homework. These book problems will not be handed in or graded.

The second type of homework consists of weekly assignments using the online homework system WebWork. WebWork can be accessed from any computer with internet connection and a web browser. The link to the login page for the course is <https://webwork.math.cwu.edu/webwork2/Math272Loke/> . Login to WebWork for the first time using your **CWU student ID number as both your username and password**. You may change your password after your first login. If you can't login, please email Dr. Loke as soon as possible. These WebWork assignments must be completed by 1PM every Wednesday. WebWork checks answers and provides immediate feedback, so you can be sure that you are completing problems correctly. In general, you will have unlimited attempts at a particular problem; the exception is if a problem is multiple-choice, in which case you will have limited attempts. Many of the problems contain randomly generated numbers, so your problem may not be identical to a classmate's. Late submissions will not be accepted, however, the lowest homework score will be dropped.

Quizzes: There will be quizzes given on Wednesdays during weeks without an exam. The problems will be taken from or be very similar to homework problems. *No notes or books are allowed.* No make-up quizzes will be given, but to allow for unavoidable absences the lowest quiz score will be dropped.

For every day that you are present in class when a worksheet is given and are making a sincere effort on the worksheet (not making a sincere effort includes working on material for other courses, napping, chatting, or leaving early, for instance), a check mark will be recorded. At the end of the quarter your total number of check marks will be divided by the total possible number minus two (to allow for unavoidable absences) and this percentage will count as one quiz score in your final quiz grade. This quiz score will not be dropped.

Exams: Any changes to the tentative exam schedule will be announced in advance. Make-up arrangements must be made at least one business day prior to an exam unless you can document an unexpected circumstance beyond your control that prevented you from taking the exam. Please note that the final exam schedule is set by the registrar's office and cannot be changed.

General Course Policies: Daily attendance is expected and considered necessary for success. It is your responsibility to find out what was covered on days you were absent. You are responsible for any announcements made in class regarding homework, exams, and quizzes. In-class worksheets will be given from time to time and will be factored into your quiz grade.

All work handed in for the course must be written neatly, legibly, clearly, using correct mathematical notation, and with sufficient explanation. A good rule of thumb is to write your solution so that a classmate who knows roughly what's going on in the course but doesn't know how to do this particular problem can understand your solution. As a side benefit, this makes it much more likely that you will be able to understand your solution when you go back to study for exams or the final! The bottom line: for any written work handed in for the course, including quizzes and exams, you must show all pertinent work.

Other Information: Central Washington University is committed to creating a learning environment that meets the needs of its diverse student body. If you anticipate or experience any barriers to learning, discuss your concerns with the instructor. Students with disabilities should contact Disability Services to discuss a range of options to removing barriers, including accommodations. Student Disability Services is located in Hogue 126. Call (509) 963-2214 or email ds@cwu.edu for more information.

I reserve the right to change the policies contained in this syllabus as dictated by developments during the quarter. Changes will be announced in class and on Canvas.