

MATH 272 Multivariable Calculus I
Dr. Boersma
Fall 2018

Goals: We will continue the study of *Calculus*. We begin the course with a study of sequences and series and how to determine convergence. We will also see how all sorts of functions can be reasonably approximated by polynomials. We will then turn our attention to multivariable functions: how they are defined, how they can be graphed, and how calculus can be used to calculate relevant rates of change and help in identifying maxima and minima. Part of our study of multivariable functions will include an introduction to the arithmetic of vectors. We will cover most of chapters 10 – 14.

Office: Samuelson 221-A, phone: 963-1395, email Stuart.Boersma@cwu.edu. Office hours will be announced in class shortly. You may of course drop by anytime. If I'm not busy I'll be glad to talk with you.

**Required
Materials**

1. **Text:** *Calculus* or *Multivariable Calculus*, by Rogawski and Adams
2. TI-83/84 Graphing Calculator or access to other graphing technology [*Optional.*]

SBG: This course is graded by a methodology called Standards Based Grading. There is a list of 15 learning standards for this course (available on Canvas), eight of which are designated Required Standards. Each standard will be measured by a short quiz (called an Evaluation). Rather than receiving a numerical score of each Evaluation, you will receive “High Pass”, “Low Pass”, or “Not Yet” (meaning you have not yet performed well enough to received credit for that standard).

One key aspect of this system is constant reassessment. Rather than have your grade affected by your performance on a single exam day, you will be given multiple opportunities to demonstrate your mastery of each standard. Your grade will be based on your highest level of achievement on each standard. This grading system rewards **growth**. Rather than slowly losing points as the quarter progresses or having your final grade dramatically affected by a single poor exam score, you can steadily progress towards an “A” in the course as long as you keep up with the material and manage your time smartly.

**Nuts and
Bolts:**

1. Three class days and the Final Exam period, will be set aside for in class Evaluation days. If you are eligible to take an Evaluation, you may take them on those days. Based on your performance, you may elect to take an Evaluation a second or third time. I will record your highest level of achievement on each standard. If you need to retake an Evaluation a fourth

time, you can receive no more than a “Low Pass” of mastery. If you would like to retake an assessment on a day other than an Evaluation Day, you must send me an email and set up an appointment to do so at least a day ahead of time. Most reassessments should try to be scheduled during my office hours, but I can try to accommodate other’s schedules as best as possible.

2. Homework assignments from the textbook will be assigned to give you practice for the course content. Additionally, each standard has a few online (WebWork) homework problems associated with it. While there is no guarantee that the Evaluation for the standard will be just like these homework problems, they should still help you assess whether or not you are ready to take an Evaluation. You must correctly answer at least 75% of the WebWork problems for any standard before you are eligible to take an Evaluation on that standard. You must correctly answer 100% of the WebWork problems for any standard before you are eligible to retake any Evaluation.
3. No Evaluations will be given after the last day of class until our Final Exam period. During the Final Exam period, you may take any Evaluation you are eligible for at most once. No Evaluations will be accepted after the Final Exam period.
4. There are 15 standards for this course with eight being required and seven being optional. The title of each required standard ends in an “R” (like “Series 1R”). For each standard attempted, you will received a grade of “High Pass”, “Low Pass”, or “Not Yet” mastered. To pass the class with a “C” or better, you will need to pass all eight required standards. See the following grading chart for more detailed information. Note that standards 14 and 15 are a little different than the others.

Grade	# of Required	# of Optional
A	8 at High Pass	6 at High Pass
A–	8 at High Pass	5 at High Pass
B+	8 at High Pass	4 at Low Pass
B	8 at High Pass	3 at Low Pass
B–	8 at High Pass	2 at Low Pass
C+	6 at High Pass and 2 at Low Pass	1 at Low Pass
C	6 at High Pass and 2 at Low Pass	0

Grade	# of Standards (any) at Low Pass
C–	7
D+	6
D	5
D–	4

Online

Homework

This class will make use of an online homework system called *WeBWork*. While problems may be printed and worked on anywhere, solutions **must be entered online**. You have multiple attempts at each problem. Please perform the following steps as soon as possible:

1. Visit <https://webwork.math.cwu.edu/webwork2>

2. Select “Math272Boersma”
3. Logon using your student ID# as both your username and password.
4. Change your password using the **User Settings** link on the Main Menu on the left.
5. Select **Homework Sets** from the Menu to see the practice assignments for the standards.

Homework There will also be **daily** homework assignments from the textbook. It is **your responsibility** to keep up with these assignments. Although these problems will not be collected or graded, they will provide you with a variety of practice before attempting the online homework or any Evaluation. There will often be time at the beginning of class to go over several of these problems from the textbook.

Technology: While the TI-83/84 graphing calculator is not as helpful in this class as in previous calculus classes, I will point out features which may allow you to gain some extra insight into some of the concepts. **Desmos** is also a very useful tool that can be used online and on most smartphones, consider getting a copy and practice using it. **Mathematica** is a very powerful computer algebra system that all CWU students have access to that you should consider learning. There will be several demonstrations during class with this software. See Canvas for instructions on how to get started.

Students who have special needs or disabilities that may affect their ability to access information or material presented in this course are encouraged to contact me or the Center for Disability Services.

DATES TO REMEMBER

Evaluation Day: October 4

Evaluation Day: October 26

Evaluation Day: November 16

Final Exam Period: December 4