

Fall 2017

Math 327-01

3:00 MTR
Sci A210

Instructor: Dale M. Rohm
Office: Sci D356

Office Hours: 11:00-3:00 on Wednesdays,
or by appointment.

Phone: (715)346-3798 e-mail: drohm@uwsp.edu
url: <http://www.uwsp.edu/mathsci/Pages/faculty/dRohm.aspx>

Text: The majority of the readings will be taken from distributed manuscripts and ancillary sources. The following book provided by text rental will only be used as a reference.

Lang, Calculus of Several Variables, Springer-UTM, 3rd ed.
ISBN: 978-0-387-96405-8

Course Description:

MATH 327. Advanced Calculus. 3 cr. Theory of differential and integral calculus: limits and convergence, continuity, derivatives, integrals; Inverse and Implicit Function Theorems; Taylor and Fourier series; transforms. **Prereq: Math 213, 222, and 300.**

Math 327 is a one-semester course designed to extend the knowledge of calculus obtained by a successful student during a standard three-semester sequence. Our goal is to complete a comprehensive introduction to the differential and integral calculus of multivariable functions between Euclidean spaces of any dimension. This approach assumes prerequisite **mastery** of single-variable calculus, **familiarity** with linear algebra computations, and **some** knowledge of the topology of Euclidean spaces.

During the semester, you will be expected to independently explore and gain understanding of mathematical concepts related to the differential and integral calculus of multivariable functions. The text provided by text rental will mostly be used for general background; lectures and assignments will mostly use material from different ancillary sources distributed throughout the semester. **Attendance is absolutely critical for success.**

Technology Policy: A graphing calculator is only occasionally useful for this course, but may be freely used if desired. Use of *Mathematica* is encouraged when appropriate. **Use of any computing device capable of remote transmission, including smart-phones, is expressly prohibited during in-class examinations.** More generally for other class meetings, please turn off your phones, or put them in airplane mode. If you promise not to text or otherwise abuse the privilege, you may keep your phones handy for the purpose of taking images of boardwork.

Course Schedule: The topics covered during the term will roughly follow the schedule given below. Any necessary deviations from this schedule will be announced during the term.

The first third of the course begins with a review of necessary pre-calculus material and ends with a formal understanding of the derivative. Most of this material will be covered using manuscripts, but you may also wish to look at examples of different types of functions from related sections of Chapters I-III, XIV, and XVI of Lang's book. In class, I will be primarily be concentrating on limits and continuity for functions between higher-dimensional spaces. Particular emphasis will be given to affine transformations as linear approximations. This begins the differential calculus of functions of several variables. My goal is for you to understand the derivative of a function of several variables as such a linear approximation.

Examination I: Thursday, October 5, 2017.

The second third of the course covers intermediate topics of the differential calculus of functions of several variable. Emphasized topics will be selected from the Chain Rule, the Implicit and Inverse Function Theorems, Quadratic Approximation and extreme values, Lagrange Multipliers, and Taylor's Theorem as time permits. This material will be presented using both manuscripts and provided ancillary readings.

Examination II: Tuesday, November 14, 2017.

The final third of the course is to develop a complete understanding of integrals of multivariable functions defined on curves and surfaces. My emphasis will be on some of the most important named theorems of calculus for such integrals. Although much of this material is found in sections from Chapters VII-X, XI, and XII of Lang, additional readings and manuscript will also be provided.

Non-Comprehensive Final Examination: 8:00-10:00, Thursday, December 21, 2017

Evaluation and Grading: In any mathematics course, it is essential that you attend class, complete assigned reading and problems as scheduled, and promptly get help when difficulties arise. Simply watching me is of little or no value without you seriously attempting them yourself. Most weeks during the semester, I will distribute a list of exercises that do NOT need to be turned in. You should still seriously attempt these problems.

However, about six or seven times throughout the semester I will also distribute a formal Problem Set which is to be completed and turned in to be graded. These Problems Sets may include some proof and computer-aided exercises. Your grade will be determined by your performance on the scheduled examinations and these Problem Sets.

Your scores will be scaled according to the percentages shown below and totaled to give a numerical score. Final letter grades will be awarded according to the following curve. **I will not be giving extra-credit problems or "retakes" except for validated medical or personal emergencies.**

<u>Grade Item</u>	<u>WeightPercentages</u>	<u>Minimum Grade</u>	
Problem sets	25%	85-100	A-
Examination I	25%	75-84	B-
Examination II	25%	60-74	C-
Final Examination	25%	50-59	D
		0-49	F

At the end of the course, I reserve the right to raise a student's grade if it is my determination that numerical scores are not reflective of that student's actual comprehension. I will never give a grade lower than that determined by this stated criteria.

The last day to add/drop a 16-week class is Thursday, Sept. 14.

The last day to drop a 16-week class with a "W" grade is Friday, Nov. 10.

Welcome to Math 327 – Advanced Calculus

My name is Prof. Rohm; I will be your instructor for this course.

I have posted a copy of my contact information on D2L. You can also find more information about me including my schedule for this semester at

- <http://www.uwsp.edu/mathsci/Pages/faculty/dRohm.aspx>
- <http://www4.uwsp.edu/math/drohms>

Here is the most recent catalog description for the course:

MATH 327. Advanced Calculus. 3 cr. Theory of differential and integral calculus of several variables. Topics selected from: differentiability; tangent spaces; line, surface, and space integrals; Inverse and Implicit function theorems; Taylor and Fourier series. **Prereq: Math 213, 222, 300.**

I have also posted a copy of the syllabus for this course up onto D2L. This includes a schedule for examinations and grading criteria for the course.

As a new or continuing UWSP student, you should be fully aware of your rights and responsibilities as a UWSP student. You can find these in the UWSP Community Bill of Rights and Responsibilities at

- <http://www.uwsp.edu/dos/Documents/CommunityRights.pdf>

UWSP is committed to providing reasonable and appropriate accommodations to students with disabilities and temporary impairments. If you have a disability or acquire a condition during the semester where you need assistance, please contact the Disability and Assistive Technology Center on the 6th floor of Albertson Hall (library) as soon as possible. DATC can be reached at 715-346-3365 or DATC@uwsp.edu.

Thank you for reading this. I look forward to collaborating with you this semester as a member of the Pointer Community.



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