

Instructor: Dr. Bryan Bornholdt**Phone:** 879-4256**Email:** bornholdt@dixie.edu**Office:** SNOW 138**Office Hours:** Tuesday and Thursday 10 am – Noon; 1 – 2 pm, other times by appointment**REQUIRED TEXT:** *Calculus: Concepts and Contexts* by James Stewart, 4th Edition.**CALCULATORS:** A TI 83 or TI 84 series graphing calculator is recommended.**COURSE PREREQUISITES**

Successful completion of Math 1220 with a C grade or higher.

COURSE DESCRIPTION

Math 2210 is designed for students intending to earn a Bachelor of Science degree in mathematics, engineering, or other science-based major. **Calculus is the language of motion and change.** Multivariable calculus is the study of motion and dynamics (change) in multiple variables (space). Topics include multivariable functions, vectors, vector fields, differential forms, multiple integrals, partial derivatives, and applications involving curl and flux including Green's Theorem, Stokes' Theorem and the Divergence Theorem. We will note the generalization of the Fundamental Theorem of Calculus in each of these major theorems.

COURSE OBJECTIVES

All classes in mathematics at Dixie State College of Utah support the general education goals of the college. Each mathematics class will require students to:

- Employ mathematical techniques in solving computational problems
- Interpret mathematical models, tables, and graphs
- Construct quantitative and logical arguments
- Communicate in the mathematical language through the proper use of terminology and notation

Upon successful completion of Math 2210, a student will demonstrate meaningful understanding of the concepts of multivariable functions, vectors, vector fields, differential forms, multiple integrals, partial derivatives. Additionally, such a student will demonstrate the ability to:

- Solve application problems in geometry and physics using plane and space vectors
- Represent (parametrize) and analyze motion along space curves using vector functions
- Use contour curves to understand the behavior of functions of several variables
- Use partial derivatives to understand and analyze functions of several variables and to solve optimization problems
- Set up and evaluate double iterated integrals using rectangular and polar coordinates
- Set up and evaluate triple iterated integrals using rectangular, cylindrical and spherical coordinates
- Set up and evaluate line integrals
- Apply line integrals to compute the work done by a vector field along a curve
- Calculate the flux of a vector field across a surface (or boundary) using surface (or contour) integrals

DISABILITIES: Students with medical, psychological, learning or other disabilities desiring reasonable academic adjustment, accommodations, or auxiliary aids to be successful in this class will need to contact the DISABILITY RESOURCE CENTER Coordinator (Baako Wahabu) for eligibility determination. Proper documentation of impairment is required in order to receive services or accommodations. DRC is located at the ground floor of the Financial Aid Office. Visit or call 652-7516 to schedule appointment to discuss the process. DRC Coordinator determines eligibility for and authorizes the provision of services.

ATTENDANCE: Attendance and participation are essential for learning. Roll will be taken and administrative drops will be enforced.

EXAMINATIONS: Exams will be given in class. There will be two midterm exams and a **final exam** at the end of the term. Each student is expected to take the examinations as scheduled in the syllabus (see below). Make-up exams will be given at the discretion of the instructor, and only if prior arrangements have been made.

The final exam will be Monday May 4 from 12:30 pm – 2:30 pm.

HOMEWORK: Homework assignments are to be done daily. Each assignment is due the second class period after the section is completed. Late HW will not be accepted. Your lowest three assignments will be dropped. It is very important that you keep current on the assignments.

Homework will be assigned and collected daily with 10 points per assignment. **Your homework may not be graded unless the following criteria are met:**

- **Your name, ‘Math 2210’, text section, and ‘Bornholdt’ clearly appear in the upper right corner of the front page.**
- **No loose edges remain from a spiral notebook.**
- **Multiple pages are to be stapled together, in order. No torn and/or folded corners.**
- **You are expected to use notation correctly at all times. Misuse of notation and terminology reflect a lack of understanding.**
- **HW is expected to be neat and detailed like a final draft.**
- **Your write up is to INCLUDE THE DIRECTIONS (paraphrasing is fine for word problems) and the original statement of the problem with supporting work to justify your answer. Your completed HW should serve as a good study reference.**
- **Answer ALL questions asked in a problem and include graphs when requested.**
- **ALWAYS specify the units when referring to area, distance, work, etc.**
- **Exact answers always refer to the use of symbols for irrational values (e , π , etc.), fractions, or terminating decimals. Decimal approximations in such cases will result in point reductions.**

**** NO LATE HOMEWORK **** YOU control these points – take homework seriously!

HELP: I am available for help during posted office hours, and other times by appointment. This is by far your best resource for help in the course.

SEMESTER SCHEDULE: <http://new.dixie.edu/reg/?page=calendar>

GRADES: Grades will be based on: **Exams 70%, Homework 30%.**

Letter grades will be assigned as follows:

A	100 – 93%	B	86.99 – 83%	C	73.99 – 70%	D	59.99 – 55%
A-	92.99 – 90%	B-	82.99 – 80%	C-	69.99 – 65%	D-	54.99 – 50%
B+	89.99 – 87%	C+	79.99 – 74%	D+	64.99 – 60%	F	49.99 – 0%

DMAIL: All information sent from the college or the instructor will be sent to your Dmail account. You **MUST** check that email account frequently. You are responsible for knowing what is contained within those messages.

Weekly Schedule (rough guideline):

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
11.1	11.3	11.5	11.7	12.1	12.3	12.5
11.2	11.4	11.6	Test #1	12.2	12.4	12.6

Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14
12.7	13.1	13.2	13.3	13.4	13.6	13.7
12.8	Test #2	13.3	13.4	13.5	13.7	13.8