

Syllabus for Math 2415 (Multivariate Calculus)  
Sections 001 and 002  
Spring 2023

**Instructor:** Dr. Alex Bearden  
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**Office:** RBN 4009  
**Office Hours:** MoWe 3:30–5:00 p.m., or by appointment  
**Preferred Method of Contact:** email or Canvas message

**Lecture Times** Section 001: MoWeFr 9:05–10:20 am  
Section 002: MoWeFr 10:30–11:45 am  
**Lecture Room** RBN 4019

### Course Format

This course, including all exams and lectures, will be **fully in-person**.

### Catalog Description of Course

Vector calculus in Euclidean  $n$ -space, functions of several variables, partial differentiation and multiple integration. Prerequisite: A grade of C or better in MATH 2414.

### Course Learning Objectives

At the end of the course, students should be able to do the following:

- Use vectors to describe lines, planes, and curves.
- Apply the operations of calculus to multivariable functions.
- Solve problems using the Fundamental Theorem for Line Integrals, Green's Theorem, Stokes' Theorem, and the Divergence Theorem.
- Solve real-world problems using multivariable calculus techniques.

### Required Textbook

*Essential Calculus: Early Transcendentals*, Second Edition, by James Stewart.  
ISBN-10: 1-133-11228-5 ISBN-13: 978-1-133-11228-0

## Expectations

You are expected at the outset of this course to be proficient in skills taught in typical pre-calculus, calculus I, and calculus II courses, including algebra, trigonometry, derivatives, and integrals. You should be able to apply algebraic and trigonometric manipulations, rules for taking derivatives, etc., without being directly prompted.

## Grading

Good mathematical reasoning and communication is more important to me than getting the correct answer. As such, the final answer in a problem may not be worth very many points compared to the work required to achieve the answer. In particular, I will count off for messy work and bad notation.

## Reading

To maximize the amount you learn and the probability of doing well in this course, you should read the textbook. I recommend lightly reading the section once before we go over it in class (enough to be able follow what we're doing in class), and then reading carefully for details after we have covered the material in class.

## Canvas

A Canvas site will be set up for the course. Notes, announcements, grades, solutions, reviews, etc. will be posted there.

## Homework

Homework problems will be posted on Canvas for each section we cover. Due dates will be communicated in-person and on Canvas (each homework set will usually be due two class days after we finish the corresponding section). Homeworks will be submitted on Canvas. **No late homeworks will be accepted for any reason whatsoever**, but to account for legitimate excuses, five homework grades will be dropped.

## Exams

There will be four in-class midterm tests during the semester and a cumulative final exam after classes end. All midterm tests will be held in the same room at the same time as the lectures. The date, time, and location of the final exam will be announced later. (This has to be approved, but my guess would be Wednesday, April 26, 10:15 a.m.–12:15 p.m.) The schedule is:

|            |  |
|------------|--|
| Midterm 1  | Wednesday, February 1  |
| Midterm 2  | Wednesday, February 22   |
| Midterm 3  | Friday, March 24   |
| Midterm 4  | Friday, April 14   |
| Final Exam | TBD, but my guess is Wednesday, April 26 (10:15 a.m.–12:15 p.m.) |

No books, notes, or calculators will be allowed on any exam. There will be no make-up exams for any reason at all, but the final can replace the lowest midterm test score (see the section “Course Grades” below for more information).

## Attendance Policy

Attendance will be expected, and is extremely important to your success in the course.

## Withdrawal

*Monday, January 23:* census date; i.e., last day to withdraw without penalty

*Thursday, March 23:* last day to withdraw with a “W”

## Calculator Policy

Calculators will not be allowed on exams.

## Help/Tutoring

There are three free help/tutoring resources available to help you through this class (besides communicating with me in class or office hours or through email): the Mathematics Learning Center (MLC) on the fourth floor of RBN, PASS tutoring in the library, and Supplemental Instruction (SI). I will post an announcement on Canvas with more details (times, locations, links, etc.) on these once the semester starts and I can find the information.

## Course Grades

Your final grade in the course will be calculated with two different methods, and the highest of these will be your overall course grade. (Essentially, homework and the final are both 20% of your grade, and every test counts as 15% of your grade, but your final exam score can replace your lowest midterm test score if that helps you.)

### Method 1: All midterms count

|               |                            |
|---------------|----------------------------|
| Homework:     | 20%                        |
| Midterms 1–4: | 60% (15% for each midterm) |
| Final Exam:   | 20%                        |

### Method 2: Lowest midterm grade replaced by final exam grade

|                             |  |
|-----------------------------|--|
| Homework:                   | 20%  |
| Best Three of Midterms 1–4: | 45% (15% for each of your three best midterms) |
| Final Exam:                 | 35%  |

Your final letter grade will be determined by a scheme no harsher than the following:

|  |   |
|--|---|
| greater than or equal to 89.5%                     | A |
| greater than or equal to 79.5% and less than 89.5% | B |
| greater than or equal to 69.5% and less than 79.5% | C |
| greater than or equal to 59.5% and less than 69.5% | D |
| less than 59.5%                                    | F |

## **Bonus/Extra Credit**

There is one (and *only one*) way to achieve bonus or extra credit in the course:

Every mathematical mistake you find in a solution I post on Canvas or in something I write in class will earn you 0.5% (half of a percent) on your final course grade. (Disclaimers: It has to be a *mathematical* mistake, you have to let me know about it before I have fixed it or communicated that I'm aware of it, and you can only earn up to a maximum of 2% total bonus on your final course grade this way.)

## **Course Content**

We will plan on covering Chapters 10–13 in the textbook.

## Schedule

The following is a tentative schedule for the course:

| <b>Monday</b>                         | <b>Wednesday</b>                            | <b>Friday</b>                       |
|---------------------------------------|---|-------------------------------------|
| <b>1/9</b> Syllabus, Start Chapter 10 | <b>1/11</b>                                 | <b>1/13</b>                         |
| <b>1/16</b> NO CLASS (MLK Day)        | <b>1/18</b>                                 | <b>1/20</b>                         |
| <b>1/23</b><br>(Census date)          | <b>1/25</b>                                 | <b>1/27</b>                         |
| <b>1/30</b>                           | <b>2/1</b> <b>Test 1</b>                    | <b>2/3</b> Start Chapter 11         |
| <b>2/6</b>                            | <b>2/8</b>                                  | <b>2/10</b>                         |
| <b>2/13</b>                           | <b>2/15</b>                                 | <b>2/17</b>                         |
| <b>2/20</b>                           | <b>2/22</b> <b>Test 2</b>                   | <b>2/24</b>                         |
| <b>2/27</b> Start Chapter 12          | <b>3/1</b>                                  | <b>3/3</b>                          |
| <b>3/6</b>                            | <b>3/8</b>                                  | <b>3/10</b>                         |
| <b>3/13</b> NO CLASS (Spring Break)   | <b>3/15</b> NO CLASS (Spring Break)         | <b>3/17</b> NO CLASS (Spring Break) |
| <b>3/20</b>                           | <b>3/22</b><br>(Last day to withdraw: 3/23) | <b>3/24</b> <b>Test 3</b>           |
| <b>3/27</b>                           | <b>3/29</b> Start Chapter 13                | <b>3/31</b>                         |
| <b>4/3</b>                            | <b>4/5</b>                                  | <b>4/7</b>                          |
| <b>4/10</b>                           | <b>4/12</b>                                 | <b>4/14</b> <b>Test 4</b>           |
| <b>4/17</b>                           | <b>4/19</b>                                 | <b>4/21</b>                         |
| <b>4/24</b> NO CLASS                  | <b>4/26</b> <b>Final Exam???</b>            | <b>4/28</b> NO CLASS                |

(The following are official UT Tyler statements.)

### **Important Covid-19 Information for Classrooms and Laboratories**

Students are required to wear face masks covering their nose and mouth, and follow social distancing guidelines, at all times in public settings (including classrooms and laboratories), as specified by Procedures for Fall 2020 Return to Normal Operations. The UT Tyler community of Patriots views adoption of these practices consistent with its Honor Code and a sign of good citizenship and respectful care of fellow classmates, faculty, and staff.

Students who are feeling ill or experiencing symptoms such as sneezing, coughing, or a higher than normal temperature will be excused from class and should stay at home and may join the class remotely. Students who have difficulty adhering to the Covid-19 safety policies for health reasons are also encouraged to join the class remotely. Students needing additional accommodations may contact the Office of Student Accessibility and Resources at University Center 3150, or call 903-566-7079 or email saroffice@uttyler.edu.

### **Recording of Class Sessions**

Class sessions may be recorded by the instructor for use by students enrolled in this course. Recordings that contain personally identifiable information or other information subject to FERPA shall not be shared with individuals not enrolled in this course unless appropriate consent is obtained from all relevant students. Class recordings are reserved only for the use of students enrolled in the course and only for educational purposes. Course recordings should not be shared outside of the course in any form without express permission.

(All of the following is standard, UT Tyler-wide, official stuff required to be on the syllabus.)

## **UT Tyler Honor Code**

Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

## **Students Rights and Responsibilities**

To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please go to this website: <http://www.uttyler.edu/wellness/rightsresponsibilities.php>

## **Campus Carry**

We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at <http://www.uttyler.edu/about/campus-carry/index.php>

## **UT Tyler a Tobacco-Free University**

All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors. Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products. There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit [www.uttyler.edu/tobacco-free](http://www.uttyler.edu/tobacco-free).

## **Grade Replacement/Forgiveness and Census Date Policies**

Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at <http://www.uttyler.edu/registrar>. Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar. Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract. The Census Date is the deadline for many forms and enrollment actions of which students need to be aware. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)

- Schedule adjustments (section changes, adding a new class, dropping without a “W” grade)
- Being reinstated or re-enrolled in classes after being dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid

## **State-Mandated Course Drop Policy**

Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date). Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions

## **Disability/Accessibility Services**

In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit <https://hood.accessiblelearning.com/UTTyler> and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director of Student Services/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at <http://www.uttyler.edu/disabilityservices>, the SAR office located in the University Center, #3150 or call 903.566.7079

## **Student Absence due to Religious Observance**

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester

## **Student Absence for University-Sponsored Events and Activities**

If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed

## **Social Security and FERPA Statement**

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically



## Emergency Exits and Evacuation

Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services

## Student Standards of Academic Conduct

Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

i. "Cheating" includes, but is not limited to:

- copying from another student's test paper;
- using, during a test, materials not authorized by the person giving the test;
- failure to comply with instructions given by the person administering the test;
- possession during a test of materials which are not authorized by the person giving the test, such as class notes or specifically designed "crib notes". The presence of textbooks constitutes a violation if they have been specifically prohibited by the person administering the test;
- using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program;
- collaborating with or seeking aid from another student during a test or other assignment without authority;
- discussing the contents of an examination with another student who will take the examination;
- divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructor has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student;
- substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
- paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program;
- falsifying research data, laboratory reports, and/or other academic work offered for credit;
- taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
- misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially.

- ii. “Plagiarism” includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another’s work and the submission of it as one’s own academic work offered for credit.
- iii. “Collusion” includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.
- iv. All written work that is submitted will be subject to review by plagiarism software.

### **UT Tyler Resources for Students**

- The Mathematics Learning Center, RBN 4021. This is an open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
- UT Tyler Writing Center (903.565.5995), [writingcenter@uttyler.edu](mailto:writingcenter@uttyler.edu)
- UT Tyler Tutoring Center (903.565.5964), [tutoring@uttyler.edu](mailto:tutoring@uttyler.edu)
- UT Tyler Counseling Center (903.566.7254)