



MATH 2326-003 Calculus III

Mon/Tues/Wed/Thur/Fri — 6:00pm–7:50pm — PKH 103



Dwight Anderson Williams II (“Mr. Williams”, “Professor Williams”)

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Faculty Profile

Tues/Thurs: 5:15pm - 5:45pm

Wed: 1:00pm - 2:00pm

Office: PKH 406

Course Description: This 3 credit-hour course covers vectors, dot product, cross product, planes, quadric surfaces, partial differentiation, multiple integrals (with applications), line integrals, Green’s Theorem, surface integrals, Stokes’ Theorem, and divergence theorem.

Prerequisite: C or better in MATH 2425.

Text: UTA Digital Access and eText Bundle Calculus II & III

Author: Pearson **ISBN-13:** 9781323849927 (copy and paste in UTA Bookstore search)

Course Objectives

At the completion of this course, students will be able to

- Speak multivariate calculus
- Hear multivariate calculus
- Observe multivariate calculus
- Write multivariate calculus
- Explain multivariate calculus
- Read multivariate calculus.

The course environment should help illuminate generalizations of objects and concepts in single-variable calculus to higher-dimensional analogues; in particular, exploring the nature of surfaces will be a primary goal along with discovering approaches to extending derivation and integration to functions defined on \mathbb{R}^n or curves in space. We will seek out fundamental relations between multi-integrals and line integrals: we will build a portfolio towards understanding the development and use of line integrals, Green’s theorem, Stoke’s theorem, and the divergence theorem.

Grade Distribution

Exam 1	20%
Exam 2	20%
Portfolio	50%
Attendance	10%
Homework	10%

Letter Grade Distribution

A	weighted average ≥ 90
B	80 - 89
C	70 - 79
D	60 - 69
F	$59 \geq$ weighted average

Coursework & Assignments

Exams

Students have through 14 June 2019 to email the instructor about any possible conflicts with the given exam schedule:

Exam 1	July 2	50 minutes
Exam 2	August 1	50 minutes

No makeup exams will be given.

The instructor will decide how to proceed if an excused absence must coincide with an exam date. See “Attendance”.

Neither calculators of any sort nor other electronic devices are permitted on Exams.

Attendance

At The University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator of student success. Each faculty member is free to develop his or her own methods of evaluating students academic performance, which includes establishing course-specific policies on attendance. **As the instructor of this section, I will record attendance before and after the break during each lecture—see next paragraph for more information—and the attendance grade is factored into the final grade as detailed in the ”Grade Distribution” section.** However, while UT Arlington does not require instructors to take attendance in their courses, the U.S. Department of Education requires that the University have a mechanism in place to mark when Federal Student Aid recipients “begin attendance in a course”. UT Arlington instructors will report when students begin attendance in a course as part of the final grading process. Specifically, when assigning a student a grade of F, faculty report must the last date a student attended their class based on evidence such as a test, participation in a class project or presentation, or an engagement online via Canvas. This date is reported to the Department of Education for federal financial aid recipients. Lectures will have a timed-break at the discretion of the instructor. The amount of time may vary based on the needs of the class and instructional objectives. During this time, students are encouraged to use the bathroom or get refreshments, review materials, and prepare for the second half of lecture.

Presence in class is more than encouraged (see “Grade Distribution” & “Exams”). Absence from class, should it occur, does not relieve students from responsibilities or consequences. Moreover, absences of different types may result in varying outcomes, including zero-grades on assignments, alternative assignments, or scaled grades on future/similar assignments. The instructor will determine which absences are excused or not while

regarding University policy and determine consequences relating to grading and assignment status.

Students are responsible for obtaining/understanding all missed content, notes, etc.

Homework

Homework assignments and deadlines will be set throughout the semester using the learning management system utilized by the University, Canvas. Homework provides an opportunity for students to evaluate understanding and engage the class with questions and comments. Students are expected to complete assignments by the corresponding deadlines.

Portfolio

The portfolio for this course is the highest weighted assignment. The instructor will hand out further instruction in class to provide examples. The main components are

- (i) *definitions*
- (ii) *examples and non-examples*
- (iii) *problems and solutions*
- (iv) *theorems and proofs*
- (v) *catalog of surfaces and usages*

Each component is worth 10%. Portfolios will be finalized and submitted no later than 8:00pm on 2019 August 13. The instructor will assign checkpoint dates for partial submission of a component or components for the purposes of grading influencing performance.

UT Arlington Policies

Drop Policy

Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships.

Disability Accommodations

UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for

providing the instructor with official notification in the form of a **letter certified** by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting: The Office for Students with Disabilities (**OSD**) or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at the OSD website.

Non-Discrimination Policy

The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit Equal Opportunity Services.

Title IX Policy

The University of Texas at Arlington (“University”) is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. *For information regarding Title IX, visit the Title IX website or contact Ms. Michelle Willbanks, Title IX Coordinator at 817-272-4585 or titleix@uta.edu.*

Academic Integrity

Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlingtons tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code in their courses by having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents Rule* 50101, §2.2, suspected violations of universitys standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the students suspension or expulsion from the University. Additional information is available at Student Conduct. Faculty are encouraged to discuss plagiarism and share the following library tutorials Copyright & Fair Use: Plagiarism and Acknowledging Sources.

Electronic Communication

UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are

responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at OIT: Student MavMail.

To email the instructor, send messages to dwight.williams@uta.edu. Include a subject line beginning with “MATH 2326-003” and contain a relevant statement/question/comment. The instructor attempts to reply to all emails before the conclusion of two subsequent class meetings—replies may be in-person or included in a message to a subset of the class if appropriate and sensible.

Campus Carry

Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit News Center: Campus Carry.

Final Review Week (not applicable to Summer 2019)

Final Review Week for semester-long courses, a period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Student Feedback Survey

At the end of each term, students enrolled in face-to-face and online classes categorized as “lecture”, “seminar”, or “laboratory” are directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback via the SFS database is aggregated with that of other students enrolled in the course. Student anonymity will be protected to the extent that the law allows. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit Student Feedback Survey.

Active Shooter

The safety and security of our campus is the responsibility of everyone in our community. Each of us has an obligation to be prepared to appropriately respond to threats to our campus, such as an active aggressor. Please review the information provided by UTA Police regarding the options and strategies we can all use to stay safe during difficult situations. For more information, visit Crime Prevention: Active Shooter.

Counseling and Psychological Services (CAPS)

CAPS is available to all students to help increase their understanding of personal issues, address

mental and behavioral health problems and make positive changes in their lives. Visit Counseling and Psychological Services or call 817-272-3671.

Student Success Programs

UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring by appointment, drop-in tutoring, etutoring, supplemental instruction, mentoring (time management, study skills, etc.), success coaching, TRIO Student Support Services, and student success workshops. For additional information, please email resources@uta.edu or view the Maverick Resources website.

Student Resources

IDEAS Center

The IDEAS Center (2nd Floor of Central Library) offers FREE tutoring and mentoring to all students with a focus on transfer students, sophomores, veterans, and others undergoing a transition to UT Arlington. Students can drop in or check the schedule of available peer tutors at www.uta.edu/IDEAS, or call 817-272-6593.

The English Writing Center (411LIBR)

The Writing Center offers FREE tutoring in 15-, 30-, 45-, and 60-minute face-to-face and online sessions to all UTA students on any phase of their UTA coursework. Register and make appointments online at the Writing Center. Classroom visits, workshops, and specialized services for graduate students and faculty are also available. Please see Writing Center: OWL for detailed information on all our programs and services.

The Library's 2nd floor Academic Plaza offers students a central hub of support services, including IDEAS Center, University Advising Services, Transfer UTA and various college/school advising hours. Services are available during the library's hours of operation.

Librarian to Contact Each academic unit has access to Librarians by Academic Subject that can assist students with research projects, tutorials on plagiarism and citation references as well as support with databases and course reserves.

Safety

Emergency Exit Procedures

Should we experience an emergency event that requires evacuation of the building, students should exit the room and move toward the nearest exit, which is located, from the perspective of individuals seated at the tables, to the right (cardinal direction East) of the classroom. When exiting the building during an emergency, do not take an elevator but use the stairwells instead. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities. Note: The evacuation plan for the classroom is included via hyperlink: click "PKH 103" at the top of the page. There are alternative exits if the nearest exit is inaccessible.

Emergency Phone Numbers

In case of an on-campus emergency, call UT Arlington Police: **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911. For a *non-emergency*: 817-272-3381.

Syllabus Amendments

The instructor (Dwight A. Williams II) reserves the right to make changes to the syllabus/schedule, including dates of exams, when unforeseen circumstances occur or to the discerned benefit of the class membership (students and instructor). These changes will be announced as early as possible so that students can adjust their personal schedules.

Library Resources

Library Home Page	http://library.uta.edu
Academic Plaza Consultation Services	http://library.uta.edu/academic-plaza
Subject Guides	http://libguides.uta.edu
Subject Librarians	http://library.uta.edu/subject-librarians
Database List	http://libguides.uta.edu/az.php
Course Reserves	http://pulse.uta.edu/vwebv/enterCourseReserve.do
Library Tutorials	http://library.uta.edu/how-to
Connecting to the library from Off-Campus	http://libguides.uta.edu/offcampus
Ask a librarian	http://ask.uta.edu
FabLab	http://fablab.uta.edu
Study Room Reservations	http://openroom.uta.edu
Scholarly Communications	http://library.uta.edu/scholcomm

Tentative Course Outline

The next page of the syllabus contains a tentative schedule for lectures and content tracking. The daily coverage may change as it depends on the progress of the class. Portfolio completion and evaluation is dependent on keeping up with assignments, including reading and problem solving.

Class	Content
Class 1/June 4	<ul style="list-style-type: none"> • Introduction, 13.1 vectors in the plane • Reading assignment: Cook 1.1 - 1.3
Class 2/June 6	<ul style="list-style-type: none"> • trigonometry review • 13.1, 13.2 vectors in 3D, 13.3 dot products, 13.4 cross products
Class 3/June 11	<ul style="list-style-type: none"> • 13.5 lines and planes in space, 13.6 cylinders and quadric surfaces • Video
Class 4/June 13	<ul style="list-style-type: none"> • 14.1 vector-valued functions, 14.2 calculus of vector-valued functions
Class 5/June 18	<ul style="list-style-type: none"> • 14.3 motions in space, 14.4 length of curves, 14.5 curvature and normal vectors • Pictures
Class 6/June 20	<ul style="list-style-type: none"> • 14.5, 15.1 graphs and level curves, 15.2 limits and continuity
Class 7/June 25	<ul style="list-style-type: none"> • 15.3 partial derivatives, 15.4 the chain rule, 15.5 directional derivatives and the gradient
Class 8/June 27	<ul style="list-style-type: none"> • 15.5, 15.6 tangent planes and linear approximation • review
Class 9/July 2	<ul style="list-style-type: none"> • review • Exam 1
No class /July 4	<ul style="list-style-type: none"> • Portfolio grading • Rest up!
Class 10/July 9	<ul style="list-style-type: none"> • 15.7 maximum/minimum problems, 15.8 Lagrange multipliers
Class 11/July 11	<ul style="list-style-type: none"> • 16.1 double integrals over rectangular regions, 16.2 double integrals over general regions, 16.3 double integrals in polar coordinates
Class 12/July 16	<ul style="list-style-type: none"> • 16.3, 16.4 triple integrals, 16.5 triple integrals in cylindrical and spherical coordinates
Class 13/July 18	<ul style="list-style-type: none"> • 16.5, 16.6 integrals for mass calculations, 16.7 change of variables in multiple integrals
Class 14/July 23	<ul style="list-style-type: none"> • review integrals • 17.1 vector fields, 17.2 line integrals
Class 15/July 25	<ul style="list-style-type: none"> • 17.2, 17.3 conservative vector fields • review
Class 16/Aug 1	<ul style="list-style-type: none"> • Exam 2 • 17.4 Green's theorem
Class 17/Aug 6	<ul style="list-style-type: none"> • 17.5 divergence and curl, 17.6 surface integrals
Class 18/Aug 8	<ul style="list-style-type: none"> • 17.7 Stokes' theorem, 17.8 divergence theorem
Final Exam/Aug 13	<ul style="list-style-type: none"> • Final portfolio submission due at 8:00pm