Math2326: Calculus III

Fall 2021

Instructor Information

Instructor: Rachid Atmai
Office Number: PKH 449
Office Telephone Number: 1 817 272 5862
Email Address: rachid.atmai@uta.edu
Faculty Profile: https://mentis.uta.edu/explore/profile/rachid-atmai
Office Hours: TuTh 3pm-5:20pm

Course Information

Section Information: Math2326-005

Time and Place of Class Meetings: TuTh 5:30pm – 6:50pm

Description of Course Content: Introductory course on vector functions in two or three dimensions, functions of two or more variables, their partial derivatives and extrema, the chain rules, directional derivatives, multiple integration, line integral, surface integrals, Green's theorem, Stokes' theorem, and the divergence theorem.
Prerequisite: C or better in MATH 2425 or HONR-SC 2425.

Student Learning Outcomes: Upon completion of MATH 2326:

1. Students will be able to use the concepts of continuity, differentiation, and integration of vector- valued functions to determine unit tangent and unit normal vectors in the process of modeling objects in three dimensions Students will be able to parametrize piecewise-smooth curves using arc length. They will be able to compute the curvature of a space curve.
2. Students will be able to compute and sketch level curves and level surfaces for functions of several variables and sketch the graphs of functions of two variables. Analyzing limits, determining continuity, and computing partial derivatives of multivariate functions is also expected. Students will be able to use tangent planes, directional derivatives, gradients, the second partials test, and Lagrange multipliers to approximate and solve optimization problems.
3. Students will be able to demonstrate techniques of multiple integration and compute iterated integrals over rectangular regions, non-rectangular regions and in other coordinate systems. They will be able to apply multiple integrals in problem situations involving area, volume, surface area, center of mass, moments of inertia, etc.
4. Students will be able to compute line integrals and surface integrals by applying the Fundamental Theorem for Line Integrals, Greens Theorem, Stokes Theorem, and the Divergence Theorem. Applying these integrals to solve applications such as mass and work problems is also expected.

Required Textbooks and Other Course Materials:

This course is participating in a new program to provide digital course materials on or before the first day of class at a reduced cost. The cost for these course materials will be automatically charged to your UTA student account and you'll have access to the materials through Canvas. Course fees are associated with course registration.

Your course materials include the e-version of the course text as well as MyLab course access (*MyLab Math with Pearson eText for Calculus 3rd edition*), which is designed to enrich student success by providing instant feedback on your assignments plus on-demand access to personalized study plans, a multimedia library, practice tests, and more.

For more information about this program, please see the Course Resources page in your Canvas course and then for further questions, contact your campus bookstore at uta@bkstr.com or 817-272-2785.

Required Textbook: Calculus, Early Transcendentals, 3rd edition, by Briggs, Cochran, Gillett .Pearson

Descriptions of major assignments and examinations: Homework will be assigned periodically, there will be two in-class exams, and a departmental final exam.

Technology Requirements
We will use Canvas, the homework is done in mylabs accessed through canvas, and Teams,. You can access tutorials on these tools by clicking on the "Get Started" Box on your Canvas Homepage.

Grading Information

Grading: Homework is worth 27%, the "signature assignment" is worth 3%, each midterm exam is worth 20%, the final exam will have a weight of 30%. The signature assignment is a short 2 page project where you have to explain in detail what you have done. Course grades are assigned based on the following percentages: F 0-59, D 60-69, C 70-79, B 80-89, A 90-100. Other grades such as W or X will be assigned in accordance with the guidelines in the catalog. Students are expected to keep track of their performance throughout the semester and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels; see "Student Support Services," below.

Make-up Exams: You will need a university valid excuse in order to have a make-up exam.

Expectations for Out-of-Class Study: Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional 9 hours per week of their own time in course-related activities, including reading required materials, completing assignments, preparing for exams, etc.

Grievances

If you experience a conflict with your instructor, first try and resolve the matter with your instructor. For issues that remain unresolved after this contact, including grade discrepancies or complaints, a grievance may be filed with the Mathematics Department by completing the departmental Grievance form at https://go.uta.edu/mathgrievance. Students not satisfied with the departmental decision may appeal to the College of Science. It is imperative for students to follow the proper procedure for their grievance to be reviewed.

Course Schedule

We will cover the following sections from the text:

1st and 2nd week, Sections: 13.1, 13.2, 13.3, 13.4, 13.5, 13.6, 14.1, 14.2. Vector and Vector-Valued Functions.

Calculus of Vector-Valued Functions
3rd and 4th week, Sections: 14.3, 14.4, 14.5, 15.1, 15.2, 15.3. Motion in Space. Length of Curves. Curvature. Functions of Several Variables. Limits. Partial Derivatives.
5th and 6th week, Sections: 15.4, 15.5, 15.6. Chain Rule. Gradient. Tangent plane.
7th and 8th week, Sections: 15.7, 15.8, 16.1, 16.2, 16.3. Extrema of Functions. Lagrange Multipliers. Multiple Integrals.
9th and 10th week, Sections: 16.4, 16.5, 16.6. Triple Integrals in Cartesian, Cylindrical and Spherical Coordinates. Mass.
11th and 12th week, Sections: 16.7, 17.1, 17.2, 17.3, 17.4. Change of variables. Vector Fields. Line Integrals. Green's Theorem.
13th and 14th week, Sections: 17.5, 17.6, 17.8. Divergence and Curl. Surface Integrals. Stokes Theorem. Divergence Theorem.
Review week.
Test 1 (tentative) 13.1-13.6, 14.1-14.5, 15.1-15.5
Test 2 (tentative) 15.6-15.8, 16.1-16.5
Final Exam (cumulative) 16.6-16.7, 17.1-17.8 (plus above sections)

Important Dates (Fall 2021):
August 25 First Day of Class
September 10 Census Date (Deadline for makeup requests for ALL exams)
Wednesday October 6 Midterm 1, tentative
Wednesday November 3 Midterm 2, tentative
November 5 Last day to drop a class
November 24-26 Thanksgiving break
December 7 Last day of classes
Saturday December 11.3:30 pm, Departmental Final Exam (May change)

As the instructor for this course, I reserve the right to adjust this schedule in anyway that serves the educational needs of the students enrolled in this course.

Institution Information

UTA students are encouraged to review the below institutional policies and informational sections and reach out to the specific office with any questions. To view this institutional information, please visit the Institutional Information page (http://www.uta.edu/provost/administrative-forms/course-syllabus/index.php) which includes the following policies among others:

- Drop Policy
- Disability Accommodations
- Title IX Policy
- Academic Integrity
- Student Feedback Survey
- Final Exam Schedule

Additional Information

Face Covering Policy
While the use of face coverings on campus is no longer mandatory, all students and instructional staff are strongly encouraged to wear face coverings while they are on campus. This is particularly true inside

buildings and within classrooms and labs where social distancing is not possible due to limited space. If a student needs accommodations to ensure social distancing in the classroom due to being at high risk they are encouraged to work directly with the Student Access and Resource Center to assist in these accommodations. If students need masks, they may obtain them at the Central Library, the E.H. Hereford University Center's front desk or in their department.

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 require regular attendance. 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.

Schedule of Lessons and Exams
You must complete all assignments and exams by the due dates. Due dates are listed in MyLab and also in the Course Summary located on the Canvas Syllabus. All deadline times are in Central Standard Time.

Announcements: Found in Canvas
- Students are responsible for all information found in these announcements.
- Students should check for new announcements at least twice a week.

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 at the north side of the building. 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.

Academic Success Center:
The Academic Success Center (ASC) includes a variety of resources and services to help you maximize your learning and succeed as a student at the University of Texas at Arlington. ASC services include supplemental instruction, peer-led team learning, tutoring, mentoring and TRIO SSS. Academic Success Center services are provided at no additional cost to UTA students. For additional information visit: Academic Success Center. To request disability accommodations for tutoring, please complete this form.

The IDEAS Center (https://www.uta.edu/ideas/) (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 Library's 2nd floor Academic Plaza (http://library.uta.edu/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.

Specialized Tutor

This class is assigned a dedicated tutor who will attend your class with you and be available outside of class time for personalized study help. Keep an eye for an introduction message from your tutor, his or her hours of availability, and other announcements..

On-Campus Tutoring

Online: Join Math LRC Tutoring (Links to an external site.) virtually via Microsoft TEAMS and post a question for our tutors. Monitored during times the math clinic (Links to an external site.) is open.

On campus tutoring is provided by two venues:

1. Math Computer Lab in Pickard Hall (PKH) room 308. Computers and tutoring are available during open lab times. For information on available tutoring times and more details, please visit our mathLRC webpage. (Links to an external site.)
2. Math Clinic in Pickard Hall (PKH) room 325. There are no computers, but you are welcome to bring your own device or simply bring in your books, pencil, and paper. Visit the math clinic website (Links to an external site.) for tutoring times and details.

For more resources see the Free tutoring page in canvas.

Emergency Phone Numbers: In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911. Non-emergency number 817-272-3381