Math 2415, Spring 2023
Calculus of Several Variables

Course Information

Class #	Class Title	Day	Time	Room	Instructor
20520	Math 2415.001	TuTh	10:00am - 11:15am	FO 2.208	Coskunuzer
20370	Math 2415.002	TuTh	4:00pm - 5:15pm	SCI 2.235	Akbar
20371	Math 2415.003	TuTh	1:00pm-2:15pm	ATC 1.305	Zweck
20494	Math 2415.004	TuTh	8:30am - 9:45am	JO 4.614	Coskunuzer

Instructors' Contact Information

Name	**Mohammad Akbar**	**Baris Coskunuzer**	**John Zweck**
Email (@utdallas.edu)	akbar	coskunuz	zweck
Office	FO 2.602B	FA 2.410	FO 3.704J
Phone	972-883-6453	972-883-4636	972-883-6699
Office Hours (P=in person) (T= via Teams)	MW 4-5 (P) & by appt	Tu 1-3 (P) & by appt	Th 2:30-3:30 (P,T) & by appt

WebAssign Contact: Questions about WebAssign should be directed to Dr. Coskunuzer. *We do not reply to email sent from within the WebAssign system.*

Office Hours: Office hours will be conducted in person and/or by Teams: See the table above. If you cannot make it to office hours *please* contact your instructor in class or by email to set up a time to meet.

Other Info: **All email correspondence with your instructor must be sent to the email address above from your utdallas.edu account.**

Course Pre-requisites and Co-requisites

Pre-requisites: A grade of C− or better in MATH 2414 or equivalent

Preparation: In general, success in Math courses strongly depends on your grade in previous relevant courses. *For Math 2415, the material in Math 2413 is much more important than that in Math 2414.* See Brushing Up on Single Variable Calculus at bottom of course web page.

Co-requisite: Students *must* be enrolled in one of the following **problem sections**:

Class #	Class Title	Day	Time	Room
20445	Math 2415.301	Friday	8:00am - 9:50am	FO 2.702
20427	Math 2415.302	Friday	1:00pm - 2:50pm	CB 1.219
20395	Math 2415.303	Friday	3:00pm - 4:50pm	FO 2.404
20410	Math 2415.304	Friday	1:00pm - 2:50pm	CB 1.218
20495	Math 2415.305	Friday	10:00am - 11:50am	CB3 1.306
20485	Math 2415.306	Friday	1:00pm - 2:50pm	FO 2.404
20496	Math 2415.307	Friday	3:00pm - 4:50pm	FN 2.202

TA Info: Graduate Teaching Assistant and Undergraduate Learning Assitant Contact Info.

Co-requisite: Students *must* be enrolled in the following **exam section** (see below for exams dates):

20372	Math 2415.701	F 7-8:15 pm	ECSS 2.410, ECSS 2.412, ECSS 2.415

Course Materials

Announcements: At the start of each week, you will receive an email entitled *This Week in MATH 2415*. This email will also be posted in the announcements section of the **MATH 2415.701** eLearning Course.

Webpage: All course material is accessible through the **MATH 2415.701** eLearning Course. Some of that material can also be accessed directly (without logging into eLearning) at the course web page.

eLearning: The course material housed solely on eLearning is not publicly available.

UTD Policy: The instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Course Description

Continuation of the Math 2413, 2414 sequence. The course covers differential and integral calculus of functions of several variables. Topics include vector valued and scalar functions, partial derivatives, directional derivatives, chain rule, Lagrange multipliers, multiple integrals, double and triple integrals, the line integral, Green's theorem, Stokes' theorem, Divergence theorem.

Student Learning Outcomes

See separate document Math 2415 Learning Outcomes on the course web page.

Required Textbooks and Materials

Text: "Calculus (Early Transcendentals)", Eighth Edition, by James Stewart, Chapters 12-16. (Do *not* purchase the 7th edition!) A less expensive Electronic Version is also available. You must have **WebAssign** access. Some Options:

1. Access code to Enhanced WebAssign (contains digital copy of the text) ISBN: 9781285858265
2. Loose leaf copy of the text bundled with Enhanced WebAssign access code ISBN: 9781305616691
3. Hardbound text bundled with Enhanced WebAssign access code ISBN: 9781305597624

Material Covered: The course will cover the following sections of the textbook: 12.1-12.6, 13.1-13.3, 14.1, 14.3-14.8, 15.1-15.3, 15.6-15.9, 16.1-16.7, and (to the extent that time permits) 16.8-16.9.

Online Resources: We encourage you to make use of the online video lectures and other resources developed by MIT and the Khan Academy.

Student Success Center Peer Tutoring

Peer Tutoring offers drop-in tutoring for MATH 2415 and many other courses. Their tutoring lab is in the basement of the library, MC 1.304, and their hours are: Monday-Thursday, 10am-6:30pm Friday, 10am-4pm They also offer online tutoring in eLearning on Saturdays, 12pm-4pm. You can find the link for online tutoring on Saturdays and more information at Student Success Center.

Academic Calendar and Assignments

The Course Schedule, Homework and other Assignments are available on the course web page. In addition, there is a large collection of Past Exams on the course web page, most with complete solutions. eLearning Course **MATH 2415.701** will be used to post grades, submit paper homework and quizzes, and access WebAssign for digital homework and the online version of the textbook.

14 Day Assessment Cycle

Here is a 14 day activity/assessment cycle. Two consecutive cycles overlap.

#	Day	Activity	Comments
1	Monday	**Quiz Released**	[on eLearning 2415.701]
2	Tuesday	Lecture	-
3	Wednesday	-	-
4	Thursday	Lecture	**Quiz Due 11:59pm**
5	Friday	Active Learning Problem Sections	
6&7	Weekend	-	-
8	Monday	-	-
9	Tuesday	-	-
10	Wednesday	Digitial Homework	Due 11:59pm
11	Thursday	-	-
12	Friday	-	-
13	Saturday	Paper Homework	Due 11:59pm
14	Sunday	-	-

Midterm Exams: There will be two midterm exams, each 75 minutes.

- Midterm I: Friday Feb 24th, from 7:00-8:15pm, on 12.1-12.6, 13.1-13.3 (excluding curvature), 15.7 (cylindrical coordinates only), 15.8 (spherical coordinates only).
- Midterm II: Friday Apr 7th, from 7:00-8:15pm, on 14.1, 14.3-14.8, 16.6 (excluding surface area).

Final Exam: TBD. The final will be based on the whole course and will be 2 hours 45 mins.

Exam Rooms: The midterm exams will be held in ECSS 2.410, ECSS 2.412, and ECSS 2.415. Rooms for the final exam will be announced later.

Grading Policy

Grades will be assigned based on the ranges given below using interval notation. The course instructors reserve the right to slightly decrease these ranges. There will be no extra credit. Extensions on homework may be granted in exceptional circumstances.

A^+	A	A^-	B^+	B	B^-	C^+	C	C^-	D	F
[97,100]	[92,97)	[90,92)	[86,90)	[79,86)	[77,79)	[75,77)	[67,75)	[64,67)	[55,64)	[0,55)

Grades: Concept Quizzes (**CQ**) 5%, Active Participation in Problem Sessions (**AP**) 5%, Active Learning Projects with 3D Printed Models 5%, Digital Homework (**DH**) 10%, Paper Homework (**PH**) 15%, Midterm I 15%, Midterm II 20%, Final 25%.

Concept Quizzes (CQ): Most Mondays at 11pm a quiz will be posted in the Math 2415.701 eLearning course. The quizzes will ask you to write answers to several theory questions *drawn directly from the lecture material.* You are to download the quiz sheet, write your answers on the sheet and then upload the sheet to eLearning by the following Thursday at 11:59pm. *Late submissions will be accepted without penalty provided they are made prior to the start of your problem session.* The quizzes will help you understand how and what to learn and how to know when you have learned. For example, we may ask you to state the formula for the dot product, draw a picture illustrating the concept of a vector projection, or state the chain rule for functions of two variables. *The quizzes will not include any problem solving.* **There will be no make ups for the quizzes.**

Active Participation (AP): Five percent of your final grade will be assigned by the Teaching Assistant based on the degree to which you *actively* participate in the Friday Problem Sessions. You will receive 5 points if you (i) arrive within the first 10 minutes, (ii) actively participate and (iii) leave no more than 10 minutes early. You will earn 3 points if you do two of these. Read the Handout for Students for more info on how we run the Problem Sessions. **Your lowest AP grade will be dropped.**

3D Models Projects: Five percent of your final grade will be assigned by the Teaching Assistants based on the degree to which you correctly complete **two** of the Active Learning Projects with 3D Printed Models which will be done in the Problem Sessions on Fri 17th Feb and Fri 10th March (the day before spring break).

Digital Homework (DH): Each problem on the Digital Homework (WebAssign) is worth 5 points. Students will have unlimited attempts. Your last answer will be graded. You may ask your instructor and the graduate TA's questions about the digital homework. **Your lowest two digital homework grades will be dropped.**

Paper Homework (PH): You may ask your instructor and the graduate TA's questions about the paper homework and you may collaborate with one other student in the class. However the final write up must be your own. **Your lowest two paper homework grades will be dropped.** Write your solutions on paper or electronically using a tablet and scan into ONE pdf file. All pages must be collected into one PDF file, not submitted as separate files. You submit your homework in the MATH 2415.701 eLearning course.The Teaching Assistants will ask you to redo your work if the final product is not legible.

Instructor Policies

Attendance

Attendance in Lectures and Problem Sections is mandatory and may be recorded. An informal study by the UTD Department of Mathematical Sciences has shown that there is a very strong correlation between attendance at lectures and course grade.

Policy on Electronic Devices in Lectures

Electronic devices, such as cell phones, must be turned off during lectures.

Policy on Calculators in Exams

No calculators, mobile devices, or other electronic devices are allowed in exams. The exam questions will designed so that you do not need a calculator.

Late Submissions

There will be no makeups allowed for the CQ's. There will be makeups on the AP and 3D models projects in the Problem Sections. Extensions for homework will only be granted in exceptional circumstances with appropriate documentation. Contact Dr Coskunuzer to request an extension on a digital homework assignment. Contact your TA to request an extension on paper homework.

Making up an exam you missed

If you know ahead of time that you will be missing an exam, you must contact your instructor by email at least 7 days in advance of the scheduled exam. If an emergency arises which prevents you from taking the exam at the scheduled time you must contact your instructor by email **no later than 48 hours after** the exam time. However we will listen to all reasonable requests. Be prepared to bring appropriate evidence in support of your request.

Academic Integrity

We will be vigorous in reporting all instances of cheating to the University administration. (See https://conduct.utdallas.edu/integrity/) In particular, you may **not** use solutions manuals, solutions you find online, or solutions copied verbatim from other students for the digital or paper homework. The graders are trained to detect such instances of cheating and will report them to the course instructors. Your instructor reserves the right to recommend to the University administration penalties varying from receiving zero points for a particular homework, to zero for your entire homework grade for the course, to failing the course. Analogous statements apply to the exams.

UT Dallas Syllabus Policies and Procedures

The information at http://go.utdallas.edu/syllabus-policies constitutes the University's policy and procedures segment of the course syllabus.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.

Seven Salient Study Skills

1. Study $\geq$ 10 hours per week per course.
2. Start studying 10 days before each exam.
3. Do past exams to master and apply concepts from lectures.
4. Study 70% solo and 30% in a group of 3.
5. Talk more than listen.
6. Write more than read.
7. Understand more than memorize.
8. Ask questions!

Also see Chew Videos on How to Study

Advice for Exams

A large collection of past exams are on the course web page together with some solutions. *Do them!*

Exams will include problems similar to those in the homework and in lectures and on the past exams. *You will not get any credit for an answer unless you also show how you arrived at that answer.* Some questions will look a little different from those you have seen before and will test whether you really understand the *concepts* we have discussed in class.

We encourage you to first master the theory and memorize calculation methods and formulae you need to know and then use this knowledge to work a range of problems *without looking at your notes.* To learn theory, calculation methods, and formulae with your lecture notes and book closed write down what you know about each item in the Math 2415 Learning Outcomes on the course webpage, as precisely and succinctly as you can. Only when you get stuck should you look at your lecture notes. If you do this about 4 times in the 10 days prior to the exam you should be in good shape. *Don't forget to work lots of (past exam) problems as well! That means attempt the problems for yourself first and only when you are really struck or want feedback should you consult the solutions.*

You should also spend *some but not all* of your preparation time studying in small groups to learn from each other. Presenting material to someone else is often the best way to work out whether you really know it yourself.