Math 2415, Spring 2016
Calculus of Several Variables

Course Information

25438  Math 2415.001  TuTh 10:00-11:15  GR 3.420

Professor Contact Information

Instructor: John Zweck
Office: FO 3.704J
Email: zweck@utdallas.edu
Webpage: I maintain a web page for the course, linked from my web page http://www.utdallas.edu/~jwz120030. Bookmark it! All course materials will be posted on this web page. I will also communicate with you using a class email list.
eLearning: eLearning Course MATH 2415.701 will be used to post grades of assignments and exams and give you access to WebAssign.
Phone: 972-883-6699 (Do not leave a message. Email me instead.)
Office Hours: Tu 2:30-3:30, W 3-4. If you cannot come to my office hours please contact me in class or by email to set up a time to meet.

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.
Co-requisites: Students must be enrolled in one of the following problem sessions:

- 25818  Math 2415.301  F 8:00-9:50  CB1 1.106
- 25706  Math 2415.302  F 8:00-9:50  CB3 1.308
- 25518  Math 2415.303  F 10:00-11:50  CB3 1.308
- 25519  Math 2415.304  F 10:00-11:50  CB1 1.106
- 25616  Math 2415.305  F 1:00-2:50  CB1 1.106
- 26249  Math 2415.306  F 1:00-2:50  CB3 1.308

Students must be enrolled the following exam section (see below for exams dates):

- 25440  Math 2415.701  F 7-8:30 pm  GR 3.302, SLC 2.303
  GR 4.428
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.

Pilot PLTL Program

A limited number of Peer-Led Team-Learning (PLTL) sessions are available for MATH 2415. More details will be announced in class, on the course website, and by email.

Student Learning Outcomes

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

Required Textbooks and Materials

Text: “Calculus (Early Transcendentals)”, Seventh Edition, by James Stewart, Chapters 12-16. (Do not purchase the 8th edition!) A less expensive Electronic Version is also available. You must have WebAssign access. Some Options:

2. Loose leaf copy of the text bundled with Enhanced WebAssign access code ISBN: 9781285111605

Calculators: You may use a scientific calculator on exams. However, the exam questions will designed so that you do not need a calculator. You may not use smart phones or other devices that can be used to access the internet.


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

Academic Calendar and Assignments

The Course Schedule and Homework Assignments are available on the my web page.
Study Plan Essay

Due at start of class on Thursday January 14th. See Study Plan Essay. See the Instructor Policies section below for more information.

Homework

There is a strong correlation between homework grades and performance on exams. There will be required digital homework (DHW), required paper homework (PHW), and recommended homework posted on the course web page for each day of class. See the Instructor Policies section below for more information on required homework. Recommended problems will not be graded. However, since the only way to learn math is to do it, you are expected to do the recommended problems, and some of them may appear on the exams!

Grading Policy

Grades: Study Plan 0%, Active Participation in Problem Sessions 5%, Digital Homework (DHW) 10%, Paper Homework (PHW) 15%, Midterm I 20%, Midterm II 20%, Final 30%.

Study Plan Essay: Students who do not complete this assignment will receive a grade of ZERO for all homework for the entire course.

Participation: Five percent of your final grade will be assigned by The Teaching Assistant based on the degree to which you actively participate in small group learning in the Friday Problem Sessions. For each problem session you can earn a maximum of 5 points if you arrive within the first 25 minutes and actively participate. You can earn a maximum of 3 points if you are 25 minutes or more late and actively participate.

Homework: Your lowest two paper homework scores will be dropped.

Midterm Exams: There will be two midterm exams, each 90 minutes.

- Midterm I: Friday Feb 19th, from 7:00-8:30pm, on 12.1-12.6, 13.1-13.3 (excluding curvature), 14.1, 15.8 (cylindrical coordinates only), 15.9 (spherical coordinates only).
- Midterm II: Friday Apr 1st, from 7:00-8:30pm, on 14.2-14.8, 15.1-15.3, 16.6.

Final Exam: Wednesday May 4th, from 2:00-4:45pm. Rooms for final exams TBD. The final will be based on the whole course and will be 2 hours 45 mins.
How I assign final grades

For each exam I work out how many points I expect a student who has a solid understanding of the material to get. I provisionally put the bottom B near this score. I use a similar strategy to provisionally determine the bottom A,C,D. To pin down the bottom A,B,C,D, I look at individual exams just above and just below the provisional cut offs. I also try to maintain a level of consistency from one semester to the next. Next I work out the bottom A,B,C,D for the homework and other assessed work. Then I take an imaginary student who got the bottom B (say) for each component of the course and calculate their score. If your score is higher than the imaginary student’s you get a B. To decide on the grades of borderline students I look carefully at performance on the final exam. In brief, I reward “strong finishers” who can show me they have a solid understanding of the entire course.

Instructor Policies

Attendance at Lectures

A recent 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. Although attendance in lectures is not required it is strongly encouraged. You will also be encouraged to actively participate in the lectures in a variety of ways.

Digital Homework (DHW)

Unless otherwise advertised in WebAssign or by email, required digital homework (DHW) assigned on TuTh will be due at 11:59pm the following Wednesday. Each problem will be worth 5 points. Students will have three attempts, with a maximum score of 5/5 for the first and second attempts and a maximum score of 3/5 for the third attempt. You will be able to submit each part of a multi-part question separately. Therefore, if you get a part correct by second try then you get full credit for that part. You may ask me and the TA’s questions about the digital homework.

Paper Homework (PHW)

Unless otherwise stated on the course Schedule and by email required paper homework (PHW) assigned on TuTh will be due at the start of your Problem Session on the Friday of the following week. Each week about 5 of the assigned problems will be graded. You must staple the cover sheet to the front of your paper homework and follow all instructions on the cover sheet. No late homework will be accepted! Your lowest two paper homework grades will be dropped. You may ask me and the TA’s questions about the paper homework and you may collaborate with another student in the class. In fact you are encouraged to do so! However the final write up is your own – two identical homework papers will both be given zero. I do not encourage large groups of people to work together on homework.
Making up an exam you missed

If you miss one of the midterms you may be given the chance to take a make up exam. To request a make up you should contact me no later than 48 hours after the exam time. Generally speaking, you will be offered a make up if you are sick or if a close relative or friend is gravely injured/sick or dies. However I will listen to all reasonable requests. Be prepared to bring appropriate evidence in support of your request. There will be no make ups for the final exam.

Academic Integrity

I will be vigorous in reporting all instances of cheating to the University administration. (See http://www.utdallas.edu/deanofstudents/dishonesty/) 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 coordinator. The course coordinator reserves the right to impose 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.

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!

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 as well as examining theory covered in class (definitions, theorems, concepts, examples). You will not get any credit for an answer unless you also show how you arrived at that answer. Some questions will be similar or even identical to homework questions. Others 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. At least one question on each exam will involve written explanations of the theory we discuss in class.

I 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 problems as well!

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.

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.