Math 2415, Fall 2016

Calculus of Several Variables
Changsong Li

Course Information

84303   Math 2415.001   TuTh 10:00–11:15am   JSOM 1.117

Professor Contact Information

Instructor:	Changsong Li
Office:	FO 2.108
Email:	Changsong.Li@utdallas.edu
Webpage:	http://www.utdallas.edu/~jwz120030/Teaching/M2415/F16/. *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:	972-883-6034 (Do not leave a message. Email me instead.)
Office Hours:	TuTh 1:00–2:00pm. 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:

84574	Math 2415.306	F 8:00-9:50	FO 2.208
84459	Math 2415.301	F 8:00-9:50	CB3 1.302
84460	Math 2415.302	F 8:00-9:50	CB3 1.312
84780	Math 2415.303	F 10:00-11:50	CB3 1.302
84572	Math 2415.304	F 10:00-11:50	CB1 1.102
84573	Math 2415.305	F 1:00-2:50	CB3 1.306
84575	Math 2415.307	F 3:00-4:50	CB3 1.312

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

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)", 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, 14.1-14.8, 15.1-15.3, 15.6-15.9, 16.1-16.5, and (to the extent that time permits) 16.6-16.9.

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.

Attendance

Attendance is mandatory and will be measured. Your attendance record may be considered when assigning your final course grade.

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:	Active Participation in Problem Sessions 5%, Digital Homework (DHW) 10%, Paper Homework (PHW) 15%, Midterm I 20%, Midterm II 20%, Final 30%.
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 Sept 30th, 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 Nov 4th, from 7:00-8:30pm, on 14.2-14.8, 15.1-15.3.

Final Exam:	**Date and Time 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.

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 6 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.

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.

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 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.

Seven Salient Study Skills

1. Study ≥ 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.