MATH 2415 CALCULUS OF SEVERAL VARIABLES
Syllabus-Summer 2018

Class Information:

Class Section	Location	Days	Time	Instructor
MATH 2415.0U1	JSOM 2.112	Mon, Wed	12:30 pm - 2:45 pm	Dr. Rabin Dahal

Instructor Information:

Office: FO 2.110	Email: Rabin.Dahal@utdallas.edu
Phone: 972 883 6584	Office Hours: MW 3:00pm-4:00pm, TR 1:30pm-2:30 pm & by appt.

Problem Section Information:

Problem Section	Location	Days	Time	Instructor	SW
MATH 2415.8U1	CB3 1.306	Mon	5:30-7:45pm	Sonam Lama	Cesar Contreras
MATH 2415.8U2	CB3 1.302	Mon	5:30-7:45pm	Jonathan Popa	Abdullah Al Mamun

Teaching Assistants Information:

Teaching Assistant	Office	Office hours	Email
Sonam Lama	FO 1.204	TR 1:00pm-2:00pm	Sonam.Lama@utdallas.edu
Jonathan Popa	FO 1.210	M 4:00pm-5:00pm	jonathan.popa1@utdallas.edu

Course Description: 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(4 semester credit hours).

Pre-Requisite: A grade of C- or better in MATH 2414 or equivalent.
Co-requisite: Students must enroll in one of the problem sections MATH 2415.8U1 or MATH 2415.8U2 in addition to the lecture section MATH 2415.0U1.

Textbook and Materials:

- **Textbook:** Calculus: Early Transcendentals, 8th edition, James Stewart, Chapters 12-16.

- **WebAssign:** You must have **WebAssign** access. Some Options:

  1. Single-term WebAssign printed access card(contains ebook): ISBN: 9781337771467
  2. Multi-term WebAssign printed access card(contains ebook): ISBN: 9781337771474
  3. Bundle: Loose-leaf textbook+multi-term WebAssign access: ISBN: 9781305616691

4. Bundle: Hardcover textbook+multi-term WebAssign access: ISBN: 9781305597624

- **Sections 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, 16.1-16.6, and 16.7-16.9.

eLearning:

You must regularly check the MATH 2415.0U1 page of eLearning:

<div align="center">https://elearning.utdallas.edu</div>

Paper Homework(PHW), grades, and important announcements will be posted under the course MATH 2415.0U1 on eLearning. You will also access WebAssign for Digital Homework(DHW) through the course MATH 2415.0U1 on eLearning.

Mathlab:

The Student Success Center Math Lab offers free help in math, physics and statistics courses to UT Dallas students currently enrolled in classes. Please contact Math Lab for appointment and info. Website:

<div align="center">http://www.utdallas.edu/studentsuccess/mathlab/</div>

Students Learning Outcomes

1. Students will be able to calculate the dot, cross, and triple product of vectors and apply those products to calculate the angle between two vectors, area of triangle and parallelogram, and volume of a parallelopiped. Students will also be able to find vector and scalar projection of a vector in the direction of another vector.

2. Given an algebraic or parametric or vector equation, the students will be able to determine the graph in space as a line or a plane or a quadric surface, or a space curve and graph it.

3. Students will be able to graph, find the limit at a point, calculate partial derivatives, and find the extreme values (both relative and absolute) of a given function of two variables.

4. Students will be able to solve the constrained optimization problems using Lagrange multiplier.

5. Students will be able to compute double integrals in cartesian coordinates over rectangular regions and general regions of type I and type II. Students will also be able to compute double integrals in polar coordinates and simple triple integrals in cylindrical and spherical coordinates.

6. Students will be able to compute and interpret directional derivatives, gradient of a scalar function, and curl and divergence of a vector field at a given point.

7. Students will be able to compute the line integrals of a vector field along a closed curve using Green's Theorem.

8. Students will be able to calculate the line integral of a vector field using Stokes' Theorem and to calculate the surface integral of a vector field using the Divergence Theorem.

Course Policy & Grading Scheme

1. **Digital Homework(DHW):**

   - Weekly Digital Homework(DHW) will be made available in WebAssign every Tuesday and will be due at 11:59pm the following Wednesday.
   - the lowest DHW scores will be dropped at the end of the semester.
   - DHW is worth 15% towards your final grade.

2. **Paper Homework(PHW):**

   - A pdf file of weekly Paper Homework(PHW) will be posted each week on eLearning. You must print the pdf of PHW, write your solutions in the space provided, staple it, and turn in at the beginning of the problem sessions.
   - You must show all of your work to earn full credit. Correct answers without sufficient supporting work will receive no or reduced credit.
   - You may ask questions about PHW to your instructor or TA or your class mate. Collaboration is encouraged. However the final write up should be yours-two identical PHW will both get zero.
   - Only a subset of assigned problems will be graded but you will not be told in advance which one.
   - PHW will count as 15% towards your final grade.
   - the lowest PHW will be dropped.

3. **Mid-Term Exams:**

   - Exam I: June 11, Monday 6:30pm-7:45pm; Location: Problem Section
   - Exam II: July 09, Monday 6:30pm-7:45pm; Location: Problem Section
   - Each midterm exam counts 20% towards your final grade.

4. **Final Exam**

   - Date and Time: Friday, Aug 03, 2018, 11am-1:45pm.
   - Location: JSOM 2.112 (Lecture Room)
   - Comprehensive but more emphasis will be on the material covered after Exam II.
   - Final exam will count as 25% towards your final grade.

5. **Participation in Problem Sessions:** 5% of your grade will be given by teaching assistants based on your active participation on the Monday Problem Sessions. The whole class will be divided into several groups of 3 and each group will work on assigned problems on the white board. The teaching assistants will monitor your progress, may give you some ideas, and answer your questions. For each session you will receive 5 points if you arrive on time, and actively participate in the entire session. You will earn at most 4.5 points if you arrive in the first 10 minutes, leave no more than 20 minutes early and actively participate. You will earn 0-4 points depending on how late you arrive, how early you leave and how actively you participate.

LATE/MISSED COURSEWORK

- There is no make-up for late or missed assignments or exams, unless extreme circumstances with proper documentation accepted by the instructor.

- In cases of extreme circumstances, one is expected to report to the instructor **before** the deadline of the coursework and resolve the problem within **one** week after the deadline.

CALCULATORS

- Calculators are not allowed in the exams.

GRADING SCHEME

- – Two midterm exams: 20% each
  - Digital Homework: 15%
  - Paper Homework: 15%
  - Active participation in Problem Sessions: 5%
  - Final exam: 25%

- All letter grades will be assigned in accordance with the table of numeric to alphabetic conversions given below.

$$[90; 93) \text{ A-}, [93; 97) \text{ A}, [97; 100^+] \text{ A+}$$
$$[80; 83) \text{ B-}, [83; 87) \text{ B}, [87; 90) \text{ B+}$$
$$[70; 73) \text{ C-}, [73; 77) \text{ C}, [77; 80) \text{ C+}$$
$$[60; 63) \text{ D-}, [63; 67) \text{ D}, [67; 70) \text{ D+}$$
$$[0, 60) \text{ F}.$$

Important Dates

- **Classes begin:** Monday, May 21, 2018.
- **Memorial Day:** Monday, May 28, 2018: - No classes.
- Thursday, May 31, 2018: Last Day to Drop a class without a "W" Full Term Session
- **Midterm Exam I**: Monday 6:30pm-7:45pm, June 11, 2018. Location: Problem Section
- **Independence Day:** Wednesday, July 4, 2018: No class.
- **Midterm Exam II**: Monday 6:30pm-7:45pm, July 09, 2018. Location: Problem Section
- **Last Day of Classes** - Full Term Session: Wednesday, August 1, 2018.
- **Final Exam**: Friday, 11am-1:45pm, August 03, 2018. Location: JSOM 2.112 (Lecture Room).

UT Dallas Syllabus Policies and Procedures:

The information at

                    http://go.utdallas.edu/syllabus-policies

constitutes university's syllabus policies and procedures segment of this syllabus.

Tentative Schedule

Monday		Wednesday	
May 21st **1** Sec 12.1, 12.2		23rd **2** Sec 12.3, 12.4	
28th **3** Memorial Day, No Classes		30th **4** Sec 12.5, 12.6 DHW#1, PHW#1 Due	
June 4th **5** Sec 12.6, 13.1 PHW#2 Due		6th **6** Sec 13.2, 13.3 DHW#2 Due	
11th **7** Sec 14.1, 14.3 PHW#3 Due, Exam#1		13th **8** Sec 14.4, 14.5 DHW#3 Due	
18th **9** Sec 14.5, 14.6 PHW#4 Due		20th **10** Sec 14.7, 14.8 DHW#4 Due	
25th **11** Sec 14.8, 15.1 PHW#5 Due		27th **12** Sec 15.2, 15.3 DHW#5 Due	
July 2nd **13** Sec 15.3, 15.6 PHW#6 Due		4th **14** Independence Day- No class DHW#6 Due	
9th **15** Sec 15.7 PHW#7 Due, Exam#2		11th **16** Sec 15.8, 15.9 DHW#7 Due	
16th **17** Sec 15.9, 16.1 PHW#8 Due		18th **18** Sec 16.2, 16.3 DHW#8 Due	
23rd **19** Sec 16.3, 16.4 PHW#9 Due		25th **20** Sec 16.5, 16.6 DHW# 9 Due	
30th **21** Sec 16.6 PHW#10 Due		Aug 1st **22** Sec 16.7, 16.8, 16.9 DHW#10 Due	

MATH 2415 WebAssign Instructions:

To gain access to WebAssign:

1. Log into eLearning, and select the course

MATH 2415.0U1 - Calculus of Several Variables - Su18

2. Click the link on the eLearning course homepage entitled **"Access WebAssign"**.

3. If you already have a WebAssign account, you will either see the WebAssign course **MATH 2415-Calculus of Several Variables - Su18** at the left or you will see a pull-down menu with courses listed; choose

MATH 2415 - Calculus of Several Variables - Su18

4. (a) If you already have a WebAssign account with the text for this course, you should be taken to the WebAssign course

MATH 2415 - Calculus of Several Variables - Su18

   (b) If you do not already have a WebAssign account with the text for this course, you will have 3 options to register.

   - Purchase access online if you do not already have an access code and you want to buy access to the ebook and homework problems without printed text.
   - Enter an access code if you have already purchased it.
   - Continue my **trial period** if you want to start using the system before purchasing. The deadline is given in red.

Once you have registered, you should be taken to the WebAssign course

MATH 2415 - Calculus of Several Variables - Su18

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