

MTH 2321 CALCULUS 3: Syllabus Fall, 2009

Text: *Calculus, Concepts and Contexts, Volume 2*, (Chapters 9-13), by J. Stewart

Instructor: Mustafa Kesir, 563 Lake Hall, x4592, kesir.m@neu.edu

Office hours: Monday & Thursday 3:00 PM – 4:30 PM, or by appointment.

Class: Kariotis Hall 110, M,W,Th 4:35-5:40

Scope of the course: Calculus 3 will extend what you have learned in Calculus 1 and 2 to functions of several variables. In particular, you will be introduced to differentiable functions of several variables and to multiple integrals. The course will culminate with a study of multidimensional generalizations of the Fundamental Theorem of Calculus. As primary applications, we mention electrostatics and heat and mass transfer. The text presents the material in a language that was introduced in the middle of the 18th century and is still widely used by engineers and scientists.

All information contained in this syllabus is provisional and subject to change. All changes will be announced in class. It is your responsibility to obtain the relevant information.

Grading:

Graded material will consist of five quizzes and a final exam, as well as occasional homework/computer lab/in-class assignments. The final counts 40%, HW and Computer Labs 15%, and the five quizzes 45%. The lowest quiz grade will be dropped. There will be no make-ups for quizzes. If one quiz is missed due to a legitimate reason and substantiating paperwork is presented, your grade on the final exam will later replace the zero grade on the missing quiz. There will be at least 5 homeworks that will be collected and graded before each quiz. The two hour, common, commonly graded, **final exam** will count as 40% of your grade in this course. You must take the final exam during the time it is scheduled unless you have a registrar-created conflict.

Do not make travel plans that conflict with the exam.

Your course grade will be based solely on test scores. To do well on the course, you not only have to understand the concepts, but also develop speed and accuracy in applying these concepts for solving problems. Tests will be graded on the basis of what you write down on paper, so be sure to give enough details for me to understand how you got the answer. Just getting the correct answer is not enough. I must be able to see that you have understood the concepts and learned how to apply them. Writing down the answer from your calculator is not sufficient. I must see how you got each number or an expression step-by-step. In short, I want you use the solutions I work out in class as a model.

Exam Schedule: We will have quizzes on: Sep. 23, Oct. 7, Oct. 26, Nov. 9 and Dec. 2. The final exam date is **TBA**.

Grading Scale: 93 and over = A; 90-92 = A-; 87-89 = B+; 83-86 = B; 80-82 = B-; 77-79 = C+; 73-76 = C; 70-72 = C-; 67-69 = D+; 63-66 = D; 60-62 = D-; and below 60 = F. 0.5 and more is rounded up to 1, 0 to 0.49 to 0.

Problem Sessions: There are 4 problem sessions attached to this course conducted by several TAs. All 4 are listed as follows:

2:50 pm - 4:30 pm Wed Shillman Hall 105

2:50 pm - 4:30 pm Mon Shillman Hall 105

2:50 pm - 4:30 pm Wed Richards Hall 200

2:50 pm - 4:30 pm Mon Robinson Hall 109

There isn't time in class to show you all of the solved problems that you might like to see, so I strongly suggest you attend the problem sessions. You can attend any one of those 4 sessions.

Tutoring Help: Every year some students find the transition to 2 and 3 dimensions very difficult. Tutoring help is available in the Math. Department. Tutoring will be in 540 B Nightingale. The hours will be Mon-Wed 10am-9pm, Thurs 10-6 and Friday 10-1. This is walk-in tutoring; no appointment is necessary. The full schedule starts Monday Sept. 21.

It is the University policy that no grade, including Incomplete, can be changed after one year, unless authorized by the Academic Standing Committee.

Attendance: I expect you to attend classes regularly and come to class on time. If you have to leave class early before it ends, you should ask for my permission in advance.

Miscellaneous: If there is an issue you would like to discuss, it is a good idea to talk to me first. If this does not help, please see the course coordinator Professor Terence Gaffney, 526A Nightingale Hall, gaff@neu.edu, x 3587.

MTH 2321 CALCULUS. 3: TOPICS AND ASSIGNMENTS

Text: *Calculus, Concepts and Contexts, Volume 2*, (Chapters 9-13), by J. Stewart
(you are strongly encouraged to work in small groups on the problem sets below)

All information contained in this schedule is provisional and will change during the course of the semester. For example, we might have to reschedule a quiz. All changes will be announced in class. It is your responsibility to obtain the relevant information.

Week 1, September 9-11

9.3 (Review only) The dot product, #1a,c,d,f, 3-8, 14-16, 21a,b,22, 29-32, 31-32,41.

9.4 The cross product, #1,2,3,7-9,15-17, 21-23, 27,28.

9.5 Equations of lines and planes (pp. 666-670), #1-3,5-7,9-12 ,15-16, 21-25, 33-34, 39-42.

Slopes of planes problems 1-4.

Week 2 September 14-18

9.6 Functions and surfaces, # 1,5,7,9-11,13, 18-20.

11.1 Functions of several variables, #1,3,9,13-16,19-21, 27-30, 36.

11.2 Limits and continuity, #5,7,9,11,13, 29-30.

11.3 Partial derivatives, #1,3-6,10-11, 15-33(odd), 51, 53.

Week 3 September 21-25

Hw 1 Due

Quiz 1 Sep 23

11.4 Tangent planes and linear approximations, #1,3-4,11-13,17, 19-20, 23, 25, 31-33, 35, 37.

11.5 Chain Rule, #1-11(odd), 13-15, 22,23, 33-34,36-39.

11.6 Directional derivatives, #1-5,7-10,11-14,21-23,25, 27,29-32, 34, 36 39-41, 47 50-52.

Week 4 September 28-Oct 2

11.7 Maximum and minimum, #1, 3-7, 9-10,18-19, 27-28.

Week 5 October 5 - 9

Hw 2 Due

Quiz 2 Oct 7

11.8 Lagrange multipliers, # 1,3,7,11,25, 27, 29, 33-34, 36, 38. Use Lagrange multipliers for the next group of problems too. p810 #48, p.826 #64-65.

12.1 Double integrals over rectangles, #3,5,9.

12.2 Iterated integrals, #3-11(odd), 23-26, 30-31, 35.

Monday October 12 Columbus Day, no classes.

Week 6 October 12 -16

12.3 Double integrals, #1,3,5,9-10,15-16, 23,25, 27, 29, 41,42.

Week 7 October 19 -23

12.4 Double integrals in polar coordinates, #1-7, 9, 15-18, 24.

12.5 Applications of double integrals (no prob-ty)
#1,3,7,11,12, 15.
12.7 Triple integrals, #3,5,7,11-13,19-21,37,39,51.

Week 8 October 26 -30

Hw 3 Due

Quiz 3 Oct 26

9.7 Cylindrical and spherical coordinates, #3,5,7,9, 11-14,21,22,31.

12.8 Integrals in cylindrical and spherical coordinates,
#1-8,11-13,15, 17,19,22,23,25a.

Week 9 November 2 - 6

13.1 Vector fields, #1,3,5-6,11-18,21,23,25.

13.2 Line Integrals, #14-20, 32a, 40-43.

Wednesday November 11, Veteran's Day observed, no classes.

Week 10 November 9 - 13

Hw 4 Due

Quiz 4 Nov 9

13.3 The Fund. Theorem of line integrals

#1,2,3,5,7,9,11,13,15,17,19, 25, 29, 36.

Also do p924 #39,41-43 using the fundamental theorem.

13.4 Green's theorem, #3,5, 7,11,13,17,18, 21-23.

Week 11 November 16-20

10.5 Parametric surfaces #13-18, 19-24.

11.4 Tangent planes to parametric surfaces p779 #39-43.

13.6 Surface integrals, #21, 23, 25, 27, 31, 41.

13.5 Curl and divergence, (Divergence) #1a, 3a, 5a, 9a, 10a, 22.

Week 12 November 23 -24

13.8 The Divergence Theorem #1,5,7,9 (the next four problems review triple integrals) 10-13, 19. Using the Divergence theorem, redo problems 31, 41 on p960 and do problems 42-47 on p960.

Wednesday Nov 25 First day of Thanksgiving recess, no classes.

Week 13 November 30 - December 4

Hw 5 Due

Quiz 5 Dec 2

13.5 Curl and divergence, (Curl) #1b, 3b, 5b, 9b, 10b, 13, 19, 21.

13.7 Stokes' Theorem, #1,3,5,7,15,16, 19.

Week 14 December 7- 9

Review.

Wednesday, December 9, last day of classes.

Final Exam TBA