

MA241—Spring 2013

Section 001

Instructor

Francisco Blanco-Silva

e-mail: blanco_at_math_dot_sc_dot_edu

office: LeConte 307

Meeting Times and Office Hours

Lectures: **MWF** 9:05 AM - 9:55 AM LeConte 115

Office Hours: **T** 3:00 PM - 6:00 PM

F 2:00 PM - 5:00 PM LeConte 307

Important deadlines you need to know

The semester begins Monday, January 14th, and ends Monday, April 29th.

The deadline to drop/add and the last day to change credit/audit is Friday, January 18th. The first day in which a "W" grade is assigned is therefore Saturday, January 19th.

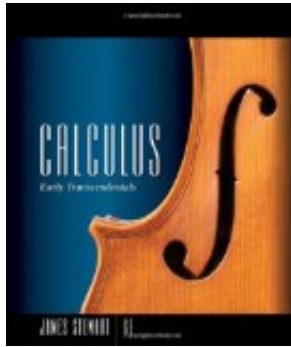
The last day to obtain a "W" grade or to elect a pass/fail grade is Monday, March 4th. The first day in which a "WF" grade is assigned is therefore Tuesday, March 5th.

Prerequisites

Qualifications through [Placement](#) or a grade of C or better in MATH 142

Text

Calculus. Early Transcendentals by James Stewart. **Thompson Brooks/Cole** 2008 (sixth edition)



[[Calculus: Early Transcendentals \(Stewart's Calculus Series\)](#) (See all [Calculus Books](#))]

You will be required to use Enhanced WebAssign, the online homework system that accompanies your textbook, for my course. I strongly encourage you to purchase an access code that provides you access to Enhanced WebAssign and the eBook rather than a traditional hard copy of the text. (If you choose to purchase a hard copy, you will need to purchase the bundle that comes with the Enhanced WebAssign code.)

Course Structure and Grading Policies

Your final score for the course will be computed as follows:

$$F = 0.15 * (HW + ME1 + ME2 + ME3 + ME4) + 0.25 * FE$$

- **Homework assignments:** (up to 100 points) 15% of the course grade. Homework problems have been assigned for each lecture (you can see them at the end of this page, under **Lesson Plan**). A selection of those problems are posted on [WebAssign](#) on the day of the lecture, and will be graded. You will have until the end of the following class day to complete the assignment (e.g. what is posted on Monday is due on Wednesday at 11:59PM; what is posted on Friday is due on Monday at 11:59PM)

In order to sign up for your section of the course on WebAssign, visit www.webassign.net and click on [I have a Class Key]. The class key for this section is

sc 8698 5875

Click [\[here\]](#) to retrieve further registration instructions.

- **Midterm Exams:** (up to 100 points each) 60% of the course grade (15% each midterm). There will be four in-class midterm exams scheduled as follows:

Test # Date

- 1 Wed, Feb 06
- 2 Wed, Feb 27
- 3 Mon, Apr 01
- 4 Wed, Apr 17

No make-up tests will be given. Only medical, death in the family, religious or official

USC business reasons are valid excuses for missing a test and must be verified by letter from a doctor, guardian or supervisor to the instructor.

- **Final Exam:** (up to 100 points) 25% of the course grade. The final exam is scheduled on Wednesday, May 1st from 9:00 AM to 11:30 AM.

The course grade will be determined as follows:

GRADE RANGE	
A	90%–100%
B+	85%–89%
B	80%–84%
C+	75%–79%
C	70%–74%
D+	65%–69%
D	60%–64%
F	below 60%

Further Information

- Some material will be stored in Dropbox. In that case, you will need an account to retrieve it. If you do not have one already, sign in through [\[this link\]](#) with your academic e-mail address to receive a base 4GB storage, plus an extra 500MB, free of charge.
- Remember to change your e-mail address on Blackboard if necessary [\[blackboard.sc.edu\]](#)
- **ADA:** If you have special needs as addressed by the *Americans with Dissabilities Act* and need any assistance, please notify the instructor immediately.
- **Math Tutoring Center:** The Math Tutoring Center is a free tutoring service for MATH 111, 115, 122, 141, 142, 170, 221, 222, and 241. The center also maintains a list of private tutors for math and statistics. The center is located in LeConte, room 105, and the schedule is available at the Department of Mathematics website ([www.math.sc.edu](#)). No appointment is necessary.
- **Peer Tutoring:** Tutoring is available for this course to assist you in better understanding the course material. The Peer Tutoring Program at the Student Success Center provides free peer-facilitated study sessions led by qualified and trained undergraduate tutors who have previously taken and excelled in this course. Sessions are open to all students who want to improve their understanding of the material, as well as their grades. Tutoring is offered Sunday 6–10pm and Monday through Thursday 2–9pm. All tutoring sessions will take place on the Mezzanine Level of the Thomas Copper Library unless otherwise noted. Please visit [www.sc.edu/tutoring](#) to find the complete tutoring schedule and make an appointment. You may also contact the Student Success Center at 803-777-1000 and [tutoring@sc.edu](#) with additional questions.

Learning Outcomes

A student who successfully completes Vector Calculus (MATH 241) should continue to develop as an independent learner with the ability to approach problems from a conceptual

viewpoint, to utilize more than one idea in a single problem, and to apply appropriate calculus skills to problems in context. In particular, the successful student will master concepts and gain skills needed to solve problems related to:

- Vectors and vector functions
- Finding equations of lines and planes
- Parametric curves
- Differentiability, continuity and limits of functions of two or more variables.
- Directional derivatives and gradients.
- Maxima and minima of functions of more than one variable.
- Double integrals
 - Over rectangular regions
 - Over non-rectangular regions
 - In polar coordinates
- Triple Integrals
 - Over rectangular regions
 - In Cylindrical coordinates
 - In Spherical coordinates
- Line Integrals
- Green's Theorem

Lesson plan, HW Assignments, Exams

- **First part: Vector functions**
 - **Mon Jan 14:** 12.1 and 12.2: Coordinates in 3-space, distance, vectors [p.769 #1--8, 10--18, 20--22; p.777 #2--23]
 - **Wed Jan 16:** 12.3: Dot product, projections [p.784 #3--10, 15--24, 29--33, 35--40]
 - **Fri Jan 18:** 12.4: Cross and triple products [p.792 #1--5, 17--20, 27--38]
 - **Wed Jan 23:** 12.5: Equations of lines and planes [p.802 #1--38, 43--46, 49--58, 67--72]
 - **Fri Jan 25:** TBA
 - **Mon Jan 28:** 12.6: Quadratic surfaces [p.810 #3--8, 29--36]
 - **Wed Jan 30:** 13.1 and 13.2: Vector functions, derivatives and integrals [p.822 #2, 4, 5, 7, 10--18, 26--28, 35--38]
 - **Fri Feb 01:** 13.3: Curvature, principal normal [p.828 #3--26; p.836 #1--6, 11, 12, 17--20, 27--29, 43, 44]
 - **Mon Feb 04:** 13.4: Motion, velocity, acceleration [p.846 #3--14, 19]
 - **Wed Feb 06:** **First Midterm---sections 12.1--12.6, 13.1--13.4**
- **Second Part: Functions of several variables**
 - **Fri Feb 08:** 14.1 and 14.2: Intro to functions of several variables, limits [p.866 #6, 8, 10--17, 21--29, 35--48]
 - **Mon Feb 11:** 14.2 and 14.3: Limits and Continuity [p.877 #5--18, 29--34, 37, 38]
 - **Wed Feb 13:** 14.3: Partial derivatives, higher order partials, mixed partials [p.889 #15--38, 43--48, 51--56, 77--85]

- **Fri Feb 15:** 14.4: Tangent planes, linear approximation [p.899 #1--6, 18, 19, 25--27, 31--37]
- **Mon Feb 18:** 14.5: Chain rule, Implicit differentiation [p.907 #1--12, 27--34]
- **Wed Feb 20:** 14.6: Directional derivatives, gradients [p.920 #4--35]
- **Fri Feb 22:** 14.7: Maxima and minima [p.930 #5--20, 29--36, 39--54]
- **Mon Feb 25:** 14.7: Maxima and minima II
- **Wed Feb 27:** **Second Midterm---sections 14.1--14.7**
- **Third Part: Integration**
 - **Fri Mar 01:** 14.8: Lagrange multipliers [all story problems (39--54) from last section can be done with Lagrange multipliers. That's today's HW]
 - **Mon Mar 04:** 15.1 and 15.2: Double integrals over rectangles, Iterated integrals [p.964 #3--22]
[[Review: Integration](#)]
 - **Wed Mar 06:** 15.3: Double integrals over general regions [p.972 #1--18]
 - **Fri Mar 08:** 15.4: Double integrals in polar coordinates [p.978 #5--27]
 - **Mon Mar 18:** 15.5: Applications [p.988 #3--20]
 - **Wed Mar 20:** 15.6: Intro to Triple integrals [p.998 #9--22]
 - **Fri Mar 22:** 15.7 and 15.8: Cylindrical and Spherical coordinates [No HW today]
 - **Mon Mar 25:** 15.7: Triple integrals in cylindrical coordinates
 - **Wed Mar 27:** 15.8: Triple integrals in spherical coordinates [p.1010 #11--14, 21--27, 39, 40]
 - **Fri Mar 29:** 15.9: Change of variables in multiple integrals [p.1020 #1--15, 19--22]
 - **Mon Apr 01:** **Third Midterm---sections 15.1--15.9**
- **Fourth Part: Green's Theorem**
 - **Wed Apr 03:** 16.1: Intro to Vector fields [p.1032 #1--4, 21--24]
 - **Fri Apr 05:** 16.2: Line integrals I [p.1043 #1--16]
 - **Mon Apr 08:** 16.2: Line integrals II [p.1043 #19--22]
 - **Wed Apr 10:** 16.3: The Fundamental Theorem for Line integrals [p.1053 #12--18]
 - **Fri Apr 12:** 16.4: Green's Theorem [p.1060 #1--14]
 - **Mon Apr 15:** Overview of the course: putting it all together.
 - **Wed Apr 17:** **Fourth midterm---First session**
 - **Fri Apr 19:** **Fourth midterm---Second session**
 - **Mon Apr 22:** **Fourth Midterm---Third session**
- **Final Stretch:**
 - **Wed Apr 24:** [Review for Final Exam (1/3)]
 - **Fri Apr 26:** [Review for Final Exam (2/3)]
 - **Mon Apr 29:** [Review for Final Exam (3/3)]
 - **wed May 01:** 9:00 AM--11:30 AM
Comprehensive exam---Chapters 12, 13, 14, 15 and 16