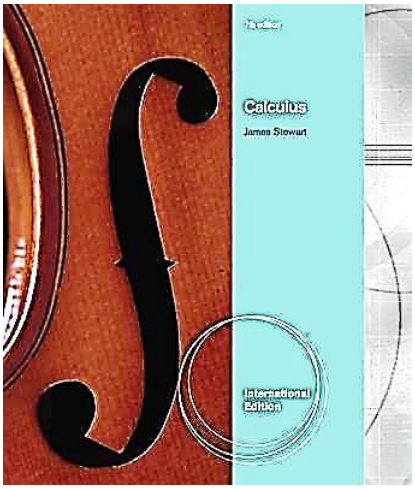
MATH 120: Calculus for Functions of Several Variables (Fall 2013)



Frequency: Fall/Spring Terms **Credit:** (4-2) 5

Course Coordinator: Benjamin Walter
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Course Website: http://math.ncc.metu.edu.tr/math120
Contains the full course information. Check it!
Course grades and announcements will be posted on the course website.

Textbook: Calculus. James Stewart, 7th international metric ed., 2012.

Exams and Grading: Course grades are determined by (online) homework, short exams (organized by the teaching assistants), two (non-cumulative) midterm exams, and a cumulative final exam.

- **Homework:** **2 %** (WeBWorK)
- **Short Exams:** 2x 10% = **20 %** (dates to be announced)
- **Midterm Exams:** 2x 22% = **44 %** (dates to be announced)
- **Final Exam:** **34 %**
- **Bonus:** **5 %** (2 % recitation and 3 % section)

Homework: Online homeworks will be assigned and graded using the WeBWorK system.

Short Exams: Two out-of-class short exams will be organized and administered by the recitation teaching assistants. These exams will consist of **problems taken from webwork**. Their timing will be announced by TAs.

Bonus: Each section instructor will announce a method for awarding bonus points during the first lecture. This method may vary between sections.

Math Help Room: The mathematics help room in T-103 is a room staffed by mathematics faculty and teaching assistants where students may gather to ask questions, work on homework, and view exams. **Students are also encouraged to seek out instructors in their offices.**

Make-up Policy: In order to be eligible to enter the make-up examination, a student should have a documented or verifiable and officially acceptable excuse. **It is not possible to make up multiple missed exams.** The make-up examination will be after the final exam, **and will include all topics.**

Cheating Policy: Cheating on any midterm or short exam will result in any of the following: (1) immediate score of ZERO on that exam, (2) immediate grade of FF in the course, (3) forwarding the case to the university disciplinary committee.

Missed Short Exam Policy: At most one short exam may be missed with a valid, acceptable excuse. This short exam's grade will be replaced by the average grade of the other exams.

Lectures		
Section 1	Wed 13:40-15:30 Fri 13:40-15:30	TZ-22
Section 2	Tue 8:40-10:30 Fri 10:40-12:30	TZ-22
Section 3	Mon 8:40-10:30 Wed 8:40-10:30	TZ-20

Recitations		
Recitation 1	Thu 15:40-17:30	SZ-25
Recitation 2	Tue 15:40-17:30	SZ-25
Recitation 3	Fri 8:40-10:30	SZ-25

The table on the next page gives a rough guideline for the content of course lectures. Professors may reorder content as necessary/desired. Exact timing of lectures may differ slightly from section to section because of the holidays. The section and page numbers marked are from the course textbook, *Calculus*, by James Stewart, 7th international metric ed., 2012.

Week 1: Sep.23-27	1	**Chapter 12. Vectors and the Geometry of Space** **§12.1:** Three-Dimensional Coordinate Systems. **§12.2:** Vectors. **§12.3:** The Dot Product.
	2	**§12.4:** The Cross Product. **§12.5:** Equations of Lines and Planes.
Week 2: Sep.30-Oct.4	3	*§12.5: Equations of Lines and Planes (cont).* **§12.6:** Cylinders and Quadric Surfaces
	4	**Chapter 13. Vector Functions** **§13.1:** Vector Functions and Space Curves. **§13.2:** Derivatives and Integrals of Vector Functions
Week 3: Oct.7-11	5	**Chapter 14. Partial Derivatives** **§14.1:** Functions of Several Variables **§14.2:** Limits and Continuity.
	6	**§14.3:** Partial Derivatives. **§14.4:** Tangent Planes and Linear Approximations.
HOLIDAY (Kurban Bayram) **Tuesday-Friday, 15-18 October**		
Week 4: Oct.21-25	7	**§14.5:** The Chain Rule.
	8	**§14.6:** Directional Derivatives and the Gradient Vector.
Week 5: Oct.28-Nov.1	**Holiday: Tuesday, 29 October**	
	9	**§14.7:** Maximum and Minimum Values.
	10	**§14.8:** Lagrange Multipliers.
Week 6: Nov.4-8	11	**Chapter 15. Multiple Integrals** **§15.1:** Double Integrals over Rectangles. **§15.2:** Iterated Integrals.
	12	**§15.3:** Double Integrals over General Regions. **§15.5:** Applications of Double Integrals.
Week 7: Nov.11-15	13	**§10.3:** Polar Coordinates. **§15.4:** Double Integrals in Polar Coordinates.
	14	**§15.10:** Change of Variables in Multiple Integrals.
	Holiday: Friday, 15 November	
Week 8: Nov.18-22	15	**§15.7:** Triple Integrals *(Simple regions. Omit moments & center of mass.)*.
	16	**Chapter 16. Vector Calculus** **§16.1:** Vector Fields.
Week 9: Nov.25-29	17	**§16.2:** Line Integrals.
	18	**§16.3:** The Fundamental Theorem for Line Integrals.
Week 10: Dec.2-6	19	**§16.4:** Green's Theorem.
	20	**Chapter 11. Infinite Sequences and Series** **§11.1:** Sequences.
Week 11: Dec.9-13	21	*§11.1: Sequences (cont)* (Including Monotonic Sequence Thm). **§11.2:** Series.
	22	*§11.2: Series (cont).* **§11.3:** The Integral Test (Not including 'Estimating the Sum of a Series').
Week 12: Dec.16-20	23	**§11.4:** The Comparison Tests (Including 'Estimating Sums').
	24	**§11.5:** Alternating Series (Including 'Estimating Sums'). **§11.6.1:** Absolute Convergence.
Week 13: Dec.23-27	25	**§11.6.2:** The Ratio and Root Tests. *§11.7: Strategy for Testing Series (Reading/Recitation Assignment).*
	26	**§11.8:** Power Series. **§11.9:** Representations of Functions as Power Series.
Week 14: Dec.30-Jan.3	27	*§11.9: Representations of Functions as Power Series (cont).* **§11.10:** Taylor and Maclaurin Series.
	Holiday: Wednesday, 1 January	
	28	*§11.10: Taylor and Maclaurin Series (cont)* (Including Binomial Series).
Week 15: Jan.6-10	29	**Review and extra problems** (Including computing power series via differential equations?)
FINAL EXAM		