

MATH 120: Calculus for Functions of Several Variables (Fall 2012)

Frequency: Fall/Spring Terms

Credit: (4-2) 5

Course Objectives: The sequence Math 119-120 is the standard complete introduction to the concepts and methods of calculus, taken by all engineering students. The emphasis is on concepts, solving problems, theory and proofs. All sections take uniform midterm and final exams. Students develop their reading, writing and questioning skills in mathematics.

Course Coordinator: Benjamin Walter

(office: S-132, phone: x2960, email: benjamin@metu.edu.tr)

Course Website: <http://math.ncc.metu.edu.tr/math120>

Course grades and general course announcements will be posted to the course website. The website also contains links to WeBWorK and further course resources.

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:** 5 % (3% WeBWorK, 2% Written)
- **Short Exams:** 3x 7% = 21 % (Wednesdays: Oct. 17, Nov. 28, Dec. 26)
- **Midterm Exams:** 2x 22% = 44 % (tentative dates: Nov. 10-11, Dec 15-16)
- **Final Exam:** 30 %
- **Bonus:** 5 %



Homework: There will be 6 online homeworks and 2 written homeworks. The online homeworks are assigned and graded using the WeBWorK system. The written homeworks will include a MATLAB component.

Short Exams: Short exams will be given on Wednesday evening Oct 17, Nov 28, Dec 26. Problems in the short exams will be chosen from the previous WeBWorK assignments.

Bonus: Exams will each have a bonus problem which counts for 1% bonus. Up to 1% bonus will also be awarded for submitting links to educational videos or finding mistakes in WeBWorK problems. Total bonus for each student is capped at 5%.

NA Grade Policy: Students who attend less than 50% of lectures (< 14 classes) **will not be eligible to take the final exam** and will automatically be given an **NA** for the course. This will also apply to students who miss (without excuse) or receive a grade of 0 on more than 2 of the course exams (midterms and short exams combined).

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.**

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.**

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

Suggested Problems: For each lecture, the assistants will announce additional suggested problems from the textbook. These problems will not be graded. The list of problems is available on the course website.

Cheating Policy: Cheating on any midterm or short exam will result in an immediate score of 0 on that exam. Furthermore the student will be forced to take the make-up final at the end of exams period in lieu of the regularly scheduled final exam. Cheating on the final exam will result in an immediate grade of FF in the course.

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 short exams.

Practical Information:

Section 1	Mon 8:40-10:30 Wed 8:40-10:30	TZ-19
Section 2	Mon 13:40-15:30 Thu 8:40-10:30	TZ-19
Section 3	Tue 15:40-17:30 Thu 15:40-17:30	TZ-19

Instructor	Section	Office	Phone	e-Mail
Kürşat Aker	Sec 2, 3	S-131	x2959	kaker
Benjamin Walter	Sec 1	S-132	x2960	benjamin

Rec 1	Thu 10:40-12:30	SZ-25
Rec 2	Mon 15:40-17:30	SZ-25

Assistant	Recitation	Office	Phone	e-Mail
Arda Buğra Özer	Rec 1, 2	RZ-40	x2907	abozer
Münevver Çelik	----	SZ-43	x2953	mucelik

Important Dates:

- **September 24:** Classes Start
- **October 1-5:** Add-Drop
- **October 17: Short Exam #1**
- **October 25-29:** HOLIDAY (Kurban and Cumhuriyet Bayram)
- **November 10-11: Midterm #1** (tentative)
- **November 15:** HOLIDAY (TRNC Republic Day)
- **November 28: Short Exam #2**
- **November 30:** Withdrawal Deadline
- **December 15-16: Midterm #2** (tentative)
- **December 26: Short Exam #3**
- **January 1:** HOLIDAY (New Year's)
- **January 4:** Classes End
- **January 7-19:** Finals Period

Week 1: Sep.24-28	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: Oct.1-5	3	§12.5: <i>Equations of Lines and Planes (cont)</i> . §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.8-12	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.
Week 4: Oct.15-19	7	§14.5: The Chain Rule.
	SHORT EXAM #1: Wed., Oct. 17	
	8	§14.6: Directional Derivatives and the Gradient Vector.
Week 5: Oct.22-24	9	§14.7: Maximum and Minimum Values.
HOLIDAY: Kurban Bayram		
Week 6: Oct.30-Nov 2	10	§14.8: Lagrange Multipliers.
Week 7: Nov.5-9	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.
MIDTERM #1: (tentative)		
Week 8: Nov.12-16	13	§10.3: Polar Coordinates. §15.4: Double Integrals in Polar Coordinates.
	14	§15.7: Triple Integrals.
Week 9: Nov.19-23	15	§15.10: Change of Variables in Multiple Integrals.
	16	§15.10: <i>Change of Variables in Multiple Integrals (cont)</i> .
Week 10: Nov.26-30	17	Chapter 16. Vector Calculus §16.1: Vector Fields.
	SHORT EXAM #2: Wed., Nov. 28	
	18	§16.2: Line Integrals.
Week 11: Dec.3-7	19	§16.3: The Fundamental Theorem for Line Integrals.
	20	§16.4: Green's Theorem.
Week 12: Dec.10-14	21	Chapter 11. Infinite Sequences and Series §11.1: Sequences.
	22	§11.2: Series.
MIDTERM #2: (tentative)		
Week 13: Dec.17-21	23	§11.3: The Integral Test (Up to Estimating the Sum of a Series). §11.4: The Comparison Tests (Up to Estimating Sums).
	24	§11.5: Alternating Series. §11.6: Absolute Convergence and the Ratio and Root Tests.
Week 14: Dec.24-28	25	§11.7: Strategy for Testing Series. §11.8: Power Series.
	SHORT EXAM #3: Wed., Dec. 26	
	26	§11.9: Representations of Functions as Power Series.
Week 15: Dec.31-Jan.4	27	§11.10: Taylor and Maclaurin Series.
	28	§11.11: Applications of Taylor Polynomials.
FINAL EXAM		

Mathematics Help Room (T-103)

The mathematics help room is a multipurpose space staffed by mathematics faculty and teaching assistants where students may gather to ask questions, work on homework (collaboratively or singly), and view exams. The room has long work tables and comfortable chairs, whiteboards and a computer. *Students are also encouraged to seek out instructors in their offices.*

Location: classroom T-103 (on the right-hand side when entering the new educational building)

The schedule of the math help room is below. Staffing may change if a professor is away at a conference. Also extra hours may be scheduled before exams and during exam-viewing periods.

	Monday	Tuesday	Wednesday	Thursday	Friday
8:40-9:30	Arda Buğra Özer	Anar Dosi	Münevver Çelik		
9:40-10:30					
10:40-11:30	Arda Buğra Özer	Özgür Kişisel	Münevver Çelik	Kürşat Aker	
11:40-12:30					
12:40-13:30	İbrahim Ünal				
13:40-14:30					
14:40-15:30			Benjamin Walter		
15:40-16:30					
16:40-17:30	Erhan Gürel		Şafak Alpay		