

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

Frequency: Fall/Spring Terms

Credit: (4-2) 5

Catalog description: Sequences, infinite series, power series, Taylor series. Vectors, lines and planes in space. Functions of several variables: Limits, continuity, partial derivatives, the chain rule, directional derivatives, tangent plane approximation, differentials, extreme values, and Lagrange multipliers. Double integrals with applications. The line integral.

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



Course Coordinator: Özgür Kişisel (office: SZ-31, phone: x2941, email: akisisel@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 short exams (organized by the teaching assistants), one (non-cumulative) midterm exam, and a cumulative final exam, as well as bonus points awarded on the basis of extra problems solved during exams..

- **Short Exams:** 3 x 10 % = **30 %** (arranged by recitation leaders)
- **Midterm Exam:** **30 %**
- **Final Exam:** **40 %**
- **Bonus:** **10%**

Homework: There will be online homeworks assigned by the WeBWork system. They won't be graded.

Short Exams: Three short exams will be organized and administered by the recitation teaching assistants. These exams will consist of problems mainly taken from the related webwork assignments. Their timing will be announced by TAs.

Make-up Policy: In order to be eligible to enter the make-up examination for a missed 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 for all exams will be after the final exam, **and will include all topics.**

Office Hours: Each instructor will hold weekly office hours in their offices during summer school.

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.

Lectures		
Section1	Tue,Wed 10:40-12:30 Thu,Fri 10:40-13:30	TZ-21
Section 2	Mon,Tue 12:40-15:30 Wed,Thu 13:40-15:30	TZ-22

Recitations		
Recitation 1	Mon 09:40-12:30	TZ-21
Recitation 2	Fri 14:40-17:30	TZ-22

Instructor	Section	Office	Phone	e-Mail
Özgür Kişisel	Section 1	SZ-31	2941	akisisel
İbrahim Ünal	Section 2	RZ-33	2902	uibrahim

Assistant	Recitation	Office	Phone	e-Mail
Arda Buğra Özer	1, 2	RZ-40	2907	abozer

<u>Week 1:</u> Jun.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.
	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.
	5	Chapter 14. Partial Derivatives §14.1: Functions of Several Variables. §14.2: Limits and Continuity.
<u>Week 2:</u> Jul.1-5	6	§14.3: Partial Derivatives. §14.4: Tangent Planes and Linear Approximations.
	7	§14.5: The Chain Rule.
	8	§14.6: Directional Derivatives and the Gradient Vector.
	9	§14.7: Maximum and Minimum Values.
<u>Week 3:</u> Jul.8-12	10	§14.8: Lagrange Multipliers.
	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.
	13	§10.3: Polar Coordinates. §15.4: Double Integrals in Polar Coordinates.
	14	§15.10: Change of Variables in Multiple Integrals.
<u>Week 4:</u> Jul.15-19	15	§15.7: Triple Integrals.
	16	Chapter 16. Vector Calculus §16.1: Vector Fields.
	17	§16.2: Line Integrals.
	18	§16.3: The Fundamental Theorem for Line Integrals.
	19	§16.4: Green's Theorem
<u>Week 5:</u> Jul.22-26	20	§16.5: Curl and Divergence
	21	Chapter 11. Infinite Sequences and Series §11.1: Sequences.
	22	§11.2: Series.
	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.
<u>Week 6:</u> Jul.29-Aug.3	25	§11.7: Strategy for Testing Series. §11.8: Power Series.
	26	§11.9: Representations of Functions as Power Series.
	27	§11.10: Taylor and Maclaurin Series.
	28	§11.11: Applications of Taylor Polynomials.
FINAL EXAM		