MATH 2110 Calculus III (4)
Department of Mathematical Sciences
The University of Memphis

Instructor: Prof. R. Kozma
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Class Meetings: 5:30 – 6:45 pm: Monday/Wednesday/Thursday
249 Dunn Hall
Office Hours: 1:00 - 2:30 pm: Tuesday, and 6:55 - 8:10 pm: Monday/Wednesday
202 Dunn Hall

Course Description:
This is the third course in the Calculus sequence and it aims at providing the mathematical foundations of multivariate calculus and the basic tools required for applications in physics and engineering. Topics include three-dimensional analytic geometry and vectors, quadratic surfaces, arc length and curvature, limits and continuity, partial derivatives and their applications, tangent planes, optimization problems and Lagrange multipliers, multiple integrals, vector fields, line and surface integrals. The course concludes with a series of basic integral theorems, such as Green's theorem, Stokes' theorem, and the Gauss-Ostogradsky's divergence theorem.

Course Prerequisites:
MATH 1910 (Differential Calculus I) and MATH 1920 (Integral Calculus II)

Text:
- James Stewart, Calculus, Cengage Learning, 8th edition
  Those who used 7th edition in preceding Calculus I & II classes, we will make all the efforts and correspondence so they can continue using their existing copies. However, the references in the course material and syllabus will be regarding the 8th edition.

Course Content: Chapters 12-16 from the textbook.

Web Resources: Will be discussed and specified during the class.

Course Evaluation:
There will be three 50-point tests and another 50 points can be earned in 10 homework assignments (5 points per homework). This gives four blocks of 50 points each. In calculating the final grade, the lowest of these 4 blocks can be dropped, and the best 3 blocks are used (max 150 points). The final exam is worth 50 points, giving the total for the course 200. In grade calculation +/- grade options will be used.

Make-Up Policy: Make-up (with justified excuse) within 3 days for missed test or exam.
Attendance Policy: As needed for purposes of reporting to the University.

MATH2110 2015 Fall Schedule

Week 1	8/24	10.1 – 10.3 Parametric and polar curves, polar calculus	
	8/26	10.4 – 10.5 Conic sections	
	8/27	10.1 – 10.5 Problem Session	
Week 2	8/31	12.1 – 12.4 Vectors, distance, direction, products	*[HW #1 due]*
	9/2	12.5 – 12.6 Equations of lines, surfaces	
	9/3	12.1 – 12.6 Problem Session	
Week 3	9/7	*-- Labor Day Holiday --*	
	9/9	13.1 – 13.2 Space curves, derivative/integral of vector functions	
	9/10	13.1 – 13.2 Problem Session	
Week 4	9/14	13.3 – 13.4 Arc length, curvature, equations of motion	*[HW #2 due]*
	9/16	Review	
	9/17	**Test #1**	
Week 5	9/21	14.1 – 14.2 Multivariate functions, 3D surfaces, multivariate calculus	
	9/23	14.3 – 14.4 Partial derivatives, tangent planes	
	9/24	14.1 – 14.4 Problem Session	
Week 6	9/28	14.5 Multivariate chain rule	*[HW #3 due]*
	9/30	14.6 Directed derivatives, gradient vector	
	10/1	14.5 – 14.6 Problem Session	
Week 7	10/5	14.7 – 14.8 Max/min of functions, Lagrange multipliers	*[HW #4 due]*
	10/7	Review	
	10/8	**Test #2**	
Week 8	10/12	*-- Fall Break --*	

	10/14	15.1 Double integral over rectangles, iterated integrals
	10/15	15.1 Problem Session
Week 9	10/19	15.2 – 15.3 Double integral/general region, polar c. system *[HW #5 due]*
	10/21	15.4 – 15.5 Application of double integrals, surface area
	10/22	15.2 – 15.5 Problem Session
Week 10	10/26	15.6 Triple integrals, applications *[HW #6 due]*
	10/28	15.7 – 15.8 Triple integrals in cylindrical/spherical c. system
	10/29	15.6 – 15.8 Problem Session
Week 11	11/2	15.9 Change of variable in multivariate integrals, Jacobian *[HW #7 due]*
	11/4	15.1 – 15.9 Review
	11/5	**Test #3**
Week 12	11/9	16.1 Vector fields, conservative fields
	11/11	16.2 – 16.3 Line integrals, fundamental theorem of line integrals
	11/12	16.1 – 16.3 Problem Session
Week 13	11/16	16.4 Green's theorem *[HW #8 due]*
	11/18	16.5 Curl and divergence
	11/19	16.4 – 16.5 Problem Session
Week 14	11/23	16.6 – 16.7 Parametric surfaces, areas, surface integrals *[HW #9 due]*
	11/25	16.8 – 16.9 Stokes' theorem, Gauss-Ostogradsky divergence theorem
	11/26	-- *Thanksgiving Holiday* --
Week 15	11/30	Review *[HW #10 due]*
Week 16	12/9	**Final Exam**