Mathematics 211
MultivariableCalculus
Fall 1993

Textbook. Varberg and Purcell, <u>Calculus</u>, 6th Edition (Ch. 14-18)

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Regular Office Hours: Mondays & Tuesdays: 2:30 - 4:30 p.m.
Wednesdays & Fridays: 11:00 - 12:00 p.m.
Wednesdays & Thursdays: 3:30 - 4:30 p.m.

Course Content. Mathematics 211 is the third semester of calculus and extends the concepts discussed in Mathematics 111,112 to higher dimensions. Topics include vectors and analytic geometry in three-dimensional space; vector-valued functions and motion in space; real-valued functions of several variables, differentiation, optimization and other applications; double integrals in rectangular and polar coordinates with applications; line integrals and work; Green's Theorem; surface integrals, flux and surface area; Stokes's Theorem; triple integrals in rectangular, cylindrical and spherical coordinates with applications; Divergence Theorem.

Problem Sets. Four problem sets will be given, as follows:

PS-1 Assigned: Thurs., Sept. 9   **PS-2** Assigned: Tues., Oct. 5
Due: Tues., Sept. 21   Due: Thurs., Oct 14

PS-3 Assigned: Thurs., Oct. 28   **PS-4** Assigned: Thurs., Nov. 18
Due: Tues., Nov. 9   Due: Tues. Nov. 30

Each problem set will have both an open-book and a closed-book portion.

Projects. There will be two projects. The first of these projects will involve using the computer to generate three-dimensional graphs; the second project will involve solving mathematical problems.

Final Examination. There will be a cumulative, open-book final examination, given in class.

Grading. The final course grade will be determined as follows:

Problem Sets (4 @ 125 points)	600 points
Projects	200 points
Final Exam	200 points
	1000 points

In general, letter grades will be determined as follows:

A: 900 or more points
B: 800-899 points
C: 700-799 points
D: 600-699 points
F: fewer than 600 points

Grades of A-, B+, B-, C+, C-, D+ may be assigned for sums of points near the above cut-offs in total points.

Honor Code: The Honor Code of Oxford College applies to all work submitted for credit in this course, and all such work will be pledged to be that and only that of the individual student submitting the work.

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Calendar of Topics
Fall 1993

Tues., Aug. 24   -   Coordinates and Vectors in Three-Space;
Dot Product [14.1, 14.2]

Thur., Aug. 26   -   Cross Product; Planes [14.3]

Tues., Aug. 31   -   Lines and Curves in Three-Space [14.4]

Thur., Sept. 2   -   Motion in Three-Space [14.5]

Tues., Sept. 7   -   Surfaces in Three-Space [14.6]

Thur., Sept. 9   -   Cylindrical & Spherical Coordinates [14.7]

Tues., Sept. 14   -   Multivariable Real-Valued Functions;
Partial Derivatives [15.1, 15.2]

Thur., Sept. 16   -   Limits, Continuity & Differentiability
[15.3, 15.4]

Tues., Sept. 21   -   Chain Rules [15.6]

Thur., Sept. 23   -   Directional Derivative, Gradients &
Tangent Plane [15.5, 15.7]

Tues., Sept. 28   -   Extrema: Testing Critical Points [15.8]

Thur., Sept. 30   -   Extrema: Lagrange's Method [15.9]

Tues., Oct. 5   -   Review

Thur., Oct. 7   -   Fall Break (no class)

Tues., Oct. 12   -   Double Integrals: set-up, evaluation,
Thur., Oct. 14   polar coordinates, applications
Tues., Oct. 19   [16.1-16.5]

Thur., Oct. 21   -   Triple Integrals: set-up, evaluation,
Tues., Oct. 26   cylindrical & spherical coordi-
Thur., Oct. 28   nates, applications [16.7,16.8]
Tues., Nov. 2

Thur., Nov. 4   -   Vector Fields and Line Integrals;
Tues., Nov. 9   Green's Theorem [17.1-17.4]
Thur., Nov. 11

Tues., Nov. 16 -   Surface Integrals & Surface Area
                             [17.5, 16.6]

Thur., Nov. 18 -   Divergence Theorem and Stokes's
Tues., Nov. 23   Theorem [17.6, 17.7]

Thur., Nov. 26 -   Thanksgiving Day (no class)

Tues., Nov. 30 -   Review

Thur., Dec. 2   -   Review. Last class day

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Wednesday, December 8 - **FinalExamination**
    at 2:00 p.m.