DEPARTMENT OF MATHEMATICS
University at Buffalo The State University of New York

UNDERGRADUATE STUDIES
244 MATHEMATICS BLDG.
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SAMPLE SYLLABUS

NOTE: This document is published only as an indication of what is typically taught in this course. Instructors have the responsibility of deciding on topics to be omitted, additional topics to be included, and the emphasis, ordering, and pacing of presentation of topics.

Course Number: **MTH 241**

Course Title: **College Calculus III**

Credit Hours: **4.0**

Textbook: **Stewart, *Calculus*: *Multivariable*** (Early Transcendentals, 6th ed. / UB custom 6th ed.), Brooks/Cole

Description: **Geometry and vectors of n-dimensional space; Green's theorem, Stoke's theorem, multidimensional differentiation and integration; applications to two and three-dimensional space.**

Prerequisite: **MTH 142 with recommended grade of *"C"* or higher;**
MTH 121-122 is usually not adequate preparation for MTH 241.

Syllabus: MTH 241 covers Chapters 12 through 16 of the text. The syllabus is written for 12 full teaching weeks, 24 lectures on a TTh schedule or 36 lectures on a MWF schedule. In a typical semester there are 28 or 29 TTh teaching days and 41 or 42 MWF teaching days. Some time is thus available for review and for exams.
The schedule below is a guideline. Some instructors will need more time in certain sections than this schedule suggests, and may be able to spend less in other sections. Note that this guideline lists a good bit of work in each week. Falling behind the pace could lead to serious trouble in finishing the course. Keep an eye on the syllabus, keep moving, and omit optional material if you have any doubts about finishing Chapter 16.

Changes from 5th ed: Cylindrical and spherical coordinates are now not introduced until sections 15.7-8.
The section on surface areas of graphs has been dropped.

Week	*Section*	*Topic*
1	12.1 - 12.4	Three-Dimensional Coordinate Systems, Vectors, Dot Product, Cross Product
2	12.5 - 12.6 13.1	Equations of Lines and Planes, Cylinders and Quadric Surfaces Vector Functions and Space Curves,
3	13.2 - 13.3 13.4	Derivatives and Integrals of Vector Functions, Arc Length and Curvature, Motion in Space: Velocity and Acceleration
4	14.1 - 14.2	Functions of Several Variables Limits and Continuity
5	14.3 - 14.5	Partial Derivatives, Tangent Planes and Linear Approximation, Chain Rule
6	14.6 - 14.8	Directional Derivatives and Gradient Vector, Maximum and Minimum Values, Lagrange Multipliers
7	15.1 - 15.3	Double Integrals over Rectangles, Iterated Integrals, Double Integrals over General Regions
8	15.4 - 15.6	Double Integrals in Polar Coordinates, Applications of Double Integrals, Triple Integrals
9	15.7 - 15.8 16.1	Triple Integrals in Cylindrical and Spherical Coordinates Instructor Option: Section 15.9 Change of Variables in Multiple Integrals Vector Fields
10	16.2 - 16.5	Line Integrals, Fundamental Theorem for Line Integrals, Green's Theorem, Curl and Divergence
11	16.6 - 16.7	Parametric Surfaces and their Areas, Surface Integrals
12	16.8 - 16.9	Stokes' Theorem, Divergence Theorem

Note to Instructors: If your experience with this syllabus suggests changes or improvements, please let these be known to the Director of Undergraduate Studies, Department of Mathematics, (Rm 232 Math Bldg, 645-6284, 108).