

COURSE SYLLABUS
MATH 311.01 -- CALCULUS III
Fall 2006

CRN:	5861
CREDIT HOURS:	4
HOUR/DAY:	12:00 - 12:50 p.m. MT RF
MEETING ROOM:	Wickersham Hall, Rom 200
INSTRUCTOR:	Ron Umble
OFFICE:	Chester House, Room 200
OFFICE PHONE:	872-3708
DEPT. PHONE:	872-3531
FAX:	871-2320
E-MAIL:	ron.umble@millersville.edu
WEB PAGE:	http://marauder.millersville.edu/~rumble/
OFFICE HOURS:	9:30 – 11:00 T R 11:00 – noon M F and by appointment
REQUIRED TEXT:	Smith and Minton, <i>Calculus</i> , McGraw-Hill, Boston, Mass. 2000. ISBN 0-07-239848-5
REQUIRED EQUIP:	Any TI graphics calculator except TI-89 or 92
OBJECTIVES:	Upon completion of this course, the student will demonstrate an understanding of the concepts and methods of multi-variable calculus.
TOPICS:	Vector calculus, functions of several real variables, partial differentiation, implicit functions, multiple integrals, line and surface integrals, Green's Theorem, Stokes' Theorem and the Divergence Theorem.
MAKE UP POLICY:	Exams missed for one of the following reasons can be made up: <ul style="list-style-type: none"> • Illness documented by the campus infirmary • Death of a family member • Religious holiday • Participation in out-of-the-classroom educational activities • Participation in varsity athletic contests. Advance notification is required in the later three cases..

EVALUATION:**Component****Weight**

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|---------------------|-----------|-----|
| • Lab reports | (5 @ 2%) | 10% |
| • Quizzes | (8 @ 2%) | 16% |
| • Hour Exams | (3 @ 16%) | 48% |
| • Final Examination | | 26% |

Grading Scale:

93% - 100%	A	73% - 76%	C
90% - 92%	A-	70% - 72%	C-
87% - 89%	B+	67% - 69%	D+
83% - 86%	B	63% - 66%	D
80% - 82%	B-	60% - 62%	D-
77% - 79%	C+	Below 60%	F

COURSE SCHEDULE
MATH 311.01 -- Calculus III
Fall 2006

Date	Lecture Topic	Text Pages	Exercises
Aug 28M	Vector algebra in 2 and 3-space	788 – 803	795:5,9,19,27,35,41,45,51 803:3,5,9,15,21,29,35,41,53
29T	Dot product and angle	805 – 808	795:7,11,21,29,37,43,47,53,57 803:11,17,23,31,37,43,55 811:4,5,11,15,19,21
31R	Orthogonal projection and work	809 – 811	797:59 811:7,13,23,29,37,41,45,53,57
Sept 1F	Vector cross product in 3-space QUIZ #1	814 – 816	811:31,39,46,47,49,50 824:9,13,17,21
4M	LABOR DAY (NO CLASS)		
5T	Geometry of vector cross product	817 – 824	824:11,15,19,23,27,31,35,43,63,67
7R	Review of parametric equations Lab #1: Graphing parametric curves	722 – 728	728:5,11,13,17,23,27,35 824:25,29,33,39,45,65,75
8F	Lines in space	827 – 829	728:7,12,15,19,25,31 833:2,5,9,13,17,23
11M	Planes in space QUIZ #2	830 – 833	833: 7,11,15,19,25,27,31,35,41,53
12T	Vector valued functions Lab Report #1 Due	851 – 858	833:29,33,37,43,55,57,61,67 859:5,9,13,15,21,25,37(no sketch)
13w	PICNIC FOR MATH MAJORS (Wickersham green 4-6 p.m.)		
14R	Calculus of vector valued functions	861 – 870	859:7,11,17,23,27,35,39(no sktch),45 870:1,5,7,11,17,19,23,27,29,39,43
15F	Motion in space Lab #2: Graphing lines tangent to space curves	872 – 874	870:9,21,25,31,33,45,51 880:5,7,11,13
18M	Centripetal force and projectile motion QUIZ #3	875 – 880	870:1,5,7,11,17,19,23,27,29,39,43 880:9,15,17,19,27,29,37
19T	Unit tangents and curvature defined	882 – 886	880:21,31,33,35,43,49, 888:2,5,7,9,11,15
21R	Computing curvature; Frenet frames	887 – 894	888:6,8,13,17,19,25,27,29,33,37
22F	Tangential and normal components of acceleration Lab Report #2 Due	895 – 902	888:21,26,28,31,34,38,43,44 902:7,9,16,17,23,27,29-32 904:13,15,17,25,27,31,35,37,39, 43,45
25M	Problem session and review		
26T	HOUR TEST I		
28R	Quadric surfaces	835 – 845	845:7-17(odd),29-37(odd)
29F	Functions of several variables Lab #3: Graphing lines tangent to coordinate curves	907 – 917	845:8-18(even) 917:5,9,15,19,23,39,51,55

Date	Lecture Topic	Text Pages	Exercises
Oct 2M	Limits and continuity	924 – 934	917:7,11,17,21,25,41,52,56 934:5,11,15,19,23,39,43,47,57
3T	Partial derivatives	936 – 944	934:1,7,13,17,21,25,41,45,55,59 944:5,9,13,17,21,25,27,31,39,43
5R	Differentiability and the total derivative	Handout	944:1,7,13,19,23,29,33,41,45,61 957:5,9,13,17,21,25,43,45
6F	Tangent planes and linear approximations Lab Report #3 Due QUIZ #4	948 – 956	957:7,11,15,19,23,27,31,37,42,44, 46
9M	The chain rule	960 – 964	957:29,32,39,56 966:3,5,7,13,17
10T	Implicit differentiation	964 – 966	966:6,8,15,23,25,27,31
12R	The directional derivative and gradient	967 – 969	966:24,26,32 975:5,9,15,27
13F	The gradient and tangent planes QUIZ #5	969 – 975	975:7,11,13,31,35,45,47, 51,53,55,63
	Extrema of functions of two variables Lab #4: Graphing tangent planes	979 – 991	975:17,29,33,39,64 991:5,13,37,51,55,61
14 – 17	FALL BREAK		
19R	More on extrema		991:4,7,15,39,52,57,63 1008:59,61,65
20F	Lagrange multipliers	994 – 997	991:56,58,62,65 1002:5,13,21,27,31,33
23M	More on Lagrange multipliers QUIZ #6	997 – 1002	1002:9,15,23,32,34
24T	Double integrals defined Lab Report #4 Due	1011 – 1016	1008:67,71 1025:9,13,17,21,23,27,31 1004:11,15,21,23,31,35,37,41,45, 47,49,53,59,65,69
26R	Problem session and review		
27F	HOURLY TEST II		
30M	Iterated integrals	1016 – 1025	1025:15,20,29,35,39,47,53,59
31T	Area and volume	1028 – 1033	1036:5,11,15,19,23
Nov 2R	Moments and center of mass	1033 - 1036	1036:9,13,17,21,27,29
3F	Double integrals in polar coordinates	1039 – 1044	1036:31 1045:5,9,13,17,19,23,27,33,39
6M	Surface area	1046 – 1051	1045:7,11,15,21,25,35 1051:3,7,15,19
7T	Mass and density	1060 - 1062	1051:5,17,20 1062:5,9,13,21,25,41,45
9R	Triple integrals	1052 – 1060	1062:7,11,15,23,29,33,35,43

Date	Lecture Topic	Text Pages	Exercises
Nov 10F	Triple integrals in cylindrical coordinates	1064 – 1069	1062:34,36 1070:5,13,15,19,23,25,29,33,37, 43,47,51 1077:5,9,13,17,21,25,27,29,33
13M	Spherical coordinates and triple integrals QUIZ #7	1071 – 1077	1070:9,17,21,27,31,35,39,45,49,53
14T	Vector fields and flow lines Lab #5: Graphing 2-dimensional vector fields	1095 – 1102	1077: 1,7,11,15,19,23,31,35, 37,41,47,51,57,61 1107:6,7,15,39,43
16R	Potentials and conservative vector fields	1102 – 1106	1077::39,43,49,53,59,62 1107:8,9,21,25,27,31,35,41
17F	Mass integral for a thin wire	1108 – 1113	1107:19,23,29,33,37 1120:5,11,17,25
20M	Line integrals and work QUIZ #8	1108 – 1120	1120:7,15,19,27,29,33,37,41,45,59
21T	Independence of path; The Fund Thm of Line Integrals Lab Report #5 Due	1123 – 1131	1120:31,35,39,43,61 1131:5,9,13,17,21,23,27,35,39,41, 49
22 – 26	THANKSGIVING BREAK		
27M	Green's Theorem	1134 – 1141	1131:7,11,15,19,25,29,37,43,45-48 1142:5,9,13,25,29
28T	Curl, divergence	1143 – 1151	1142:7,11,15,27 1151:5,9,13,17,21,25,31,35,39 1184:3,5,9,15,17,19,25,27,29,35
30R	Problem session and review		
Dec 1F	Hour Test III		
4M	Surface Integrals	1153 – 1157	1151:7,11,15,19,23,27,37 1164:23,27,31,35,41
5T	Flux and the Divergence Theorem	1163 – 1174	1164:25,29,33,37,43,67 1174:5,9,13,21,25
7R	Stokes' Theorem	1175 – 1182	1174:11,15,23,27 1182:5,9,13,21,25
8F	More on Stokes' Theorem		
11M	General Review		
14R	FINAL EXAMINATION (12:30 - -2:30 p.m.)		