

Marshall University
Syllabus

Course Title	<i>Calculus with Analytic Geometry III</i>
Course Number	<i>MTH 231- Section 201-CRN 4072</i>
Semester/Year	Spring 2016
Days/Time	MTWR 12-12:50pm
Location	WAEC 3119
Instructor	Dr. Michael Otunuga
Office	WES 3229 (Engineering building)
Office Hours	MTWR 1-2, 4-5:00pm others by appointment. To make an appointment, email in advance when possible.
Phone	(304) 696-3049
E-Mail	otunuga@marshall.edu
Textbook	Calculus , Early Transcendental , 3rd edition by Jon Rogawski
Sections Covered	12.1-12.7, 13.1-13.5, 14.1-14.8, 15.1-15.6, 16.1-16.5
Course	Vectors, curves, and surfaces in space
Course Description	Derivatives and integrals of functions of more than one variable. A study of the calculus of vector valued functions.
Calculator	TI-83 or higher. In order to plot 3D graphs, download Graph3 on your calculator by following instructions on last page (Those with TI-89 and above need not worry about this). Graphing calculators may not be allowed during exam
Prerequisites	MTH 229 or 230
Outcome & Objectives	Student will learn to calculate and apply limits, to calculate with vectors, to calculate partial and total derivatives and to interpret them as rates of change, to calculate multiple integrals, line integrals and surface integrals; and to interpret them as accumulations and limits of sample sums, to apply integrals to word problems, to apply derivatives and integrals to parametric curves, to work with rectangular, polar, cylindrical and spherical coordinates.
University Policies	By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to http://www.marshall.edu/academic-affairs/?page_id=802 for policies regarding Academic Dishonesty, Excused Absence Policy, University Computing Services Acceptable Use, Inclement Weather, Dead Week, Academic Dismissal, Academic Forgiveness, Academic Probation and Suspension, Academic Rights and Responsibilities for Students, Affirmative Action, Sexual Harassment. See the University Academic Calendar (http://www.marshall.edu/calendar/academic/) for course withdrawal dates.
Free Tutoring	Free tutoring in Music Smith Hall 115 from Monday to Friday.
Disabled Students	The Disabled Student Services web site is now available. You may visit it at http://www.marshall.edu/disabled . Students seeking special accommodations need to follow the university policy detailed at this web site.
Coming late	Students should come on time and stay in the class for entire class. If you are late by more than 5 minutes, you will be considered to be absent. You will get a grade reduction if you make a total of 10 unexcused absence

Course Contents

Vector Geometry:	Vectors, the dot product, the cross product, equations of lines and planes, cylinders, spherical and quadric surfaces, etc.
Vector-Valued Functions:	Vector functions and space curves, derivatives and integrals of vector functions, arc length, speed, and curvature, motion in space, etc.
Differentiation in Several Var:	Functions of several variables, limits and continuity, partial derivatives, tangent planes and linear approximation, the chain rule, gradient and directional derivatives, optimization in several variables etc.
Multiple Integration:	Double and triple integrals, iterated integrals, cylindrical and spherical coordinates, change of variables, etc.
Line & Surface Integrals:	Vector fields, line integrals, the fundamental theorem of line integrals, Green's theorem, curl and divergence, parametric surfaces and their areas, surface integrals, Stokes' theorem, etc.

Course Requirements / Due Dates

Homework: 6 (six) Homework assignments will be given and collected. Copies of Homework are listed on the next page. You are responsible for reading the text, working the exercises, coming to office hours for help, and being aware of the dates for the major exams.

Quizzes: There will total of 5 quizzes during the last 10 minutes of class. You will not be allowed to take the quiz if you come late to class. Quiz problems will be given from assigned homework problems. Make-up quizzes and exam are only given in the event of a university-excused absence only.

Tests: There will be 3 exams given in class during the semester. Exam dates: Week 4; Week 8; Week 12

Final Exam: There will be a two-hour final exam on May 6, 10:15-12:15pm

Grading Policy

Attendance	15pts
Quizzes	75pts
Homework	60pts
Three major exams	300pts
Final (comprehensive) exam	150pts
The grading scale A: 90 – 100%, B: 80 – 89, C: 70– 79, D: 60 – 69, F: 0-59	

Homework Problems

Turn in at least the bold faced problems. You are free to do more.

----- Homework 1: -----

- 12.1 1, 2, 5, 9, 11, 15, 17, 19, 22, 23, 25, 27, 29, 34, 37, 39, 40, 42, 48, 52
12.2 1, 3, **5**, 9, **11**, **13**, **15**, 17, **18**, 22, 23, **25**, 27, **30**, **34**, **37**, **41**, **43**, **48**, 50, **52**, 54
12.3 1, **4**, 11, **13**, 15, 18, **19**, 21, **22**, **25**, 27, **29(a)**, 30, **31**, 32, **34**, **36**, 39, 41, **44**, 49, 51, **53**, **59**, 63, **65**
12.4 **5**, 7, 9, **11**, **15**, 17, **19**, **21**, 29, **30**, 34, 36, **37**, 38, **39**, 40, **54**
12.5 1, **3**, 5, **7**, 10, 11, 13, **15**, 17, 18, **19**, 21, **23**, 24, **27**, **28**, **32**, **33**, **35**, **37**, **41**, **49**, **51**, 58, 59, 60, 64, 68, 69, 70
12.6 1, **2**, 3, 7, **10**, **13**, 17, 21, 25, 29
12.7 1, 3, **5**, 7, 9, **11**, 13, 15, **17**, 21, 22, **23**, 25, 26, **29**, 31, **35**, 37, **39**, 41, 47, 49, **51**, 53, **55**, 59

----- Homework 2: -----

- 13.1 1, 2, 3, **4**, 6, **8**, 9, **11**, 14, 15, **20**, **21**, 26, **27**, **36**, 37
13.2 **3**, **4**, 7, **9**, 10, **13**, 14, **17**, **20**, 22, **23**, **25**, 29, **31**, 33, 39, **41**, **43**, 47, **49**, 51, **53**
13.3 1, **3**, **5**, 7, 9, **11**, 18, 22, **24**, 26
13.4 **2**, **3**, **5**, **7**, **8**, 9, **12**, **13**, 15, **16**, 44, **47**, Osculating Plane
13.5 **3**, 4, **5**, **12**, 15, **16**, 18, 34, **36**, 38, **39**

----- Homework 3: -----

- 14.1 1, **3**, 5, **6**, 10, **17**, **18**, **19**, **20**
14.2 **3**, 7, **9**, **13**, **14**, **15**, 16, 22, **24**, **31**
14.3 **2**, **3**, **5**, 7, 13, **15**, **21**, 25, **29**, **34**, 37, **41**, 57, **58**, 60, **61**, 63, **66**, 71
14.4 1, **3**, 5, **8**, 11, **13**, **16**, 21, **23**, 29
14.5 **2**, **5**, **6**, **7**, 9, **11**, 13, **16**, 19, **21**, 23, **25**, 27, **29**, **31**, 42, **43**

----- Homework 4: -----

- 14.6 **1**, 2, **3**, **5**, **7**, **8**, 10, 11, **12**, 14, 15, **25**, **27**, 30
14.7 1, **2**, 3, **5**, **7**, **9**, 10, **11**, 12, 13, **15**, 19, 23, 28, **29**, 30, **35**
14.8 1, 4, **5**, **7**, **8**, **9**, 10, 11, 42(try)
15.1 **1**, **3**, 5, 7, **15**, 17, **19**, **21**, 23, **24**, 25, 27, **29**, 31, **33**, **37**, 39, **41**
15.2 1, **5**, 7, **8**, **9**, 11, **13**, **17**, 18, **21**, **25**, **26**, **27**, **33**, 34, **35**, **39**, 40, **41**, **45**, 46

----- Homework 5: -----

- 15.3 **2**, **6**, **10**, **14**, **16**, **19**, **24**, **32**
15.4 **2**, **6**, **10**, **16**, **20**, **27**, **45**
15.5 **2**, **6**, **12**, **24**, **32**
15.6 **1**, **4**, **11**, **12**, **14**, **22**, **31**

----- Homework 6: -----

- 16.1 **2**, **10**, **13-16**, **24**, **42**,
16.2 **2**, **4**, **12**, **19**, **20**, **23**, **30**, **36**, **37**
16.3 **2**, **4**, **9**, **14**, **20**
16.4 **2**, **13**, **23**

How to download Graph3 on your TI-83 for 3D PLOT

Step 1: Download and install TI Connect Software to your computer. The link is here <https://education.ti.com/en/us/software/details/en/14D11109C9F44D55B9BBF65E5A62E7F1/swticonnectsoftwareforwindows>

Step 2: Download the file “graph3.zip” (contains graph3.8xk file and a PDF instruction manual) to your computer. Unzip it. Download it here: <http://www.ticalc.org/archives/files/fileinfo/247/24741.html>

Step 3: Connect your calculator to your computer using the graph link **cable** (this should be included when you purchase your calculator)

Step 4: Open the installed TI Connect Software and click “Send to TI Device”. Make sure your connected calculator is **ON** throughout Steps 4 and 5. Click “Select device” on the opened window (if calculator is not ON, no device will be seen)

Step 5: Open the unzipped graph3 folder and drag “graph3.8xk” file to the opened window. Next, click “Send to device”

Step 6: To use 3D, go to APPS on your calculator, click Graph3. Press tab “Y=” twice and select 3D

How to download Graph3D on your TI-84/TI 84 Plus/ TI 84 Plus SE for 3D PLOT

You can also download graph3 described above but graph3D is better for TI-84 series. Follow the following instructions to download.

Step 1: Download and install TI Connect Software to your computer. The link is here <https://education.ti.com/en/us/software/details/en/14D11109C9F44D55B9BBF65E5A62E7F1/swticonnectsoftwareforwindows>

Step 2: Download the file “graph83p” to your computer. Unzip it. Download it here: <http://www.ticalc.org/archives/files/fileinfo/255/25521.html>

Step 3: Connect your calculator to your computer using the graph link **cable** (this should be included when you purchase your calculator)

Step 4: Open the installed TI Connect Software and click “Send to TI Device”. Make sure your connected calculator is **ON** throughout Steps 4 and 5. Click “Select device” on the opened window (if calculator is not ON, no device will be seen)

Step 5: Open the unzipped graph3 folder and drag “graph3d” file to the opened window. Next, click “Send to device”

Step 6: To open the program on your calculator, click “PRGM” and chose the appropriate file.