MTH 233 S2020
JeVu

THE COLLEGE OF STATEN ISLAND, CUNY
DEPARTMENT OF MATHEMATICS

MATH 233 – CALCULUS III
COURSE OUTLINE

Text: Rogawski, Adams & Franzosa, Calculus – Early Transcendentals, 4th Edition.
W. H. Freeman & Co. (2019).
ISBN: 9781319411671 (e-book ISBN: 9781319411657)

Note: Below, each lesson corresponds to a one-hour class. Homework problems in **bold** correspond to similar WeBWorK problems, which must be submitted online. Students are also required to complete five MATLAB projects listed below, which can be obtained in PDF at www.lulu.com with search term "csi math".

Lesson	Section	Topic	Homework Problems
1	12.1	Vectors in the plane	**10, 41, 48, 50, 58,** 61
2	12.2	Vectors in three dimensions	**13, 29, 53, 63**
3	12.3	Dot product	**20, 43, 52, 57, 63, 70,** 82
4	12.4	Cross product	**11, 17, 22, 25, 47**
5	12.4	Cross product	
6	12.5	Planes in three-space	**3, 15, 17, 23, 28, 30,** 41
7	12.5	Planes in three-space	
8	12.6	Quadric surfaces	**9, 19, 21, 25, 43, 45,** 46, MATLAB Project 1
9	13.1	Vector-valued functions	**20, 27, 35, 36, 38, 41, 43**
10	13.2	Calculus of vector-valued functions	**8, 10, 13, 19, 26, 27, 43, 48, 52,** 58
11	13.3	Arc length and speed	**1, 2, 3, 12, 16, 30, 31, 34**, **35**
12	13.3	Arc length and speed	MATLAB Project 2
13	14.1	Functions of several variables	**2, 4**, **6**, 8, **9**, 11, **21, 22**, 23
14	14.2	Limits and continuity in several variables	**1**, 5, **7, 8**, 20, **29, 35, 40**
15	14.3	Partial derivatives	3**, 4, 19, 22**, 25**, 28, 44, 53, 63**
16	14.3	Partial derivatives	
17	14.4	Differentiability and tangent planes	**4, 7, 10, 11, 18, 19, 20, 23, 31, 37, 41**
18	14.4	Differentiability and tangent planes	MATLAB Project 3
19	14.5	Gradient and directional derivatives	**1, 5, 7, 23, 25, 34**, **38**

20	14.5	Gradient and directional derivatives	
21		Review	
22		**Exam 1**	
23		**Exam 1**	
24	14.6	Chain rule in several variables	**1, 2, 6, 9**, **20, 29, 30, 33, 34**, 37, 38
25	14.6	Chain rule in several variables	
26	14.7	Optimization in several variables	**4, 7, 16, 21, 28, 32, 41, 44, 50**
27	14.7	Optimization in several variables	
28	14.8	Lagrange multipliers	**5, 11, 17, 19, 23, 25, 36, 47**
29	14.8	Lagrange multipliers	
30	15.1	Integration in several variables	**1, 7, 16, 19, 29, 37, 40, 42, 44,** 46, **50**
31	15.1	Integration in several variables	
32	15.2	Double integrals over general regions	**1, 7, 22,** 29, **32, 35, 38, 44, 46, 50**
33	15.2	Double integrals over general regions	MATLAB Project 4
34	15.3	Triple integrals	**2, 6, 16,** 17**, 20, 23, 29, 35**, **41**
35	15.3	Triple integrals	
36	12.7	Cylindrical and spherical coordinates	**1, 7, 27, 31, 34, 40,** 52, **69**
37	15.4	Integration in polar, cylindrical coordinates	**3, 9, 17, 21, 23, 27, 34,** 37, **45, 47**
38	15.4	Integration in spherical coordinates	
39	16.1	Vector fields	**3, 15, 24, 43, 46,** 48, **50, 52**
40	16.2	Line integrals	**1, 5, 7, 15, 20, 21, 29, 36, 39, 43**
41	16.3	Conservative vector fields	**3, 8, 11, 13, 14, 15, 19,** 25, 27, 31
42		Review	
43		**Exam 2**	
44		**Exam 2**	
45	16.4	Parametrized surfaces	2, **3, 7, 16, 19, 23, 25, 29, 34, 37**
46	16.4	Surface integrals and surface area	
47	16.5	Surface integrals of vector fields	**3, 7, 11, 15, 17, 23, 30**

48	16.5	Surface integrals of vector fields	
49	17.1	Green's Theorem	**3, 9, 11,** 14**, 15, 18, 29,** 36, 41
50	17.1	Green's Theorem	
51	17.2	Stokes' Theorem	**1, 3, 19, 22, 23, 24, 26,** 27, 29
52	17.2	Stokes' Theorem	
53	17.3	Divergence Theorem	**1, 3, 11, 15, 17, 18, 23, 25**
54	17.3	Divergence Theorem	
55		Final review	
56		Final review	