Fall 2019

MATH 309-101: Mathematical Analysis for Technology

M. Michal

NJIT New Jersey's Science & Technology University

THE COLLEGE OF SCIENCE AND LIBERAL ARTS

THE DEPARTMENT OF MATHEMATICAL SCIENCES

MATH 309-101: Mathematical Analysis for Technology
Fall 2019 Course Syllabus

NJIT Academic Integrity Code: All Students should be aware that the Department of Mathematical Sciences takes the University Code on Academic Integrity at NJIT very seriously and enforces it strictly. This means that there must not be any forms of plagiarism, i.e., copying of homework, class projects, or lab assignments, or any form of cheating in quizzes and exams. Under the University Code on Academic Integrity, students are obligated to report any such activities to the Instructor.

COURSE INFORMATION

Course Description: Emphasis on partial derivatives; vector calculus, and multiple integrals.

Number of Credits: 4

Prerequisites: MATH 112 with a grade of C or better, or MATH 133 with a grade of C or better or MATH 238 with a grade of C or better.

Course-Section and Instructors

Course-Section	Instructor
Math 309-001	Professor R. Bouayad
Math 309-101	Professor M. Michal

Office Hours for All Math Instructors: Fall 2019 Office Hours and Emails

Required Textbook:

Title	*Calculus: Concepts and Contexts*
Author	Stewart
Edition	4th
Publisher	Cengage
ISBN #	978-0495557425

Supplementary Text:

Active Calculus-Mulitvariable, Schlicker, 2018.
ISBN: 978-1724366856
https://activecalculus.org/ACM.html

https://activecalculus.org/multi/
https://activecalculus.org/

University-wide Withdrawal Date: The last day to withdraw with a **W** is **Monday, November 11, 2019**. It will be strictly enforced.

POLICIES

DMS Course Policies: All DMS students must familiarize themselves with, and adhere to, the Department of Mathematical Sciences Course Policies, in addition to official university-wide policies. DMS takes these policies very seriously and enforces them strictly.

Grading Policy: The final grade in this course will be determined as follows:

Homework	10%
Quizzes	10%
Midterm Exam I	15%
Midterm Exam II	17%
Midterm Exam III	18%
Final Exam	30%

Your final letter grade will be based on the following tentative curve.

A	90 - 100	**C**	65 - 74
B+	85 - 89	**D**	55 - 64
B	80 - 84	**F**	0 - 54
C+	75 - 79		

Attendance Policy: Attendance at all classes will be recorded and is **mandatory**. Please make sure you read and fully understand the Math Department's Attendance Policy. This policy will be strictly enforced.

Students are expected to attend class. Each class is a learning experience that cannot be replicated through simply "getting the notes."

Homework Policy: Homework is an expectation of the course. All homework assignments are online using WebAssign. The online assignments can be completed at www.webassign.net. You need to have a student access code. Access codes are included with new book that is bundled with WebAssign; codes can be purchased separately from the bookstore or online. WebAssign gives you free access for two weeks after the start of class. In addition, on the first day of class your course instructor will give an additional code "Class key" needed to enroll to WebAssign.

Quiz Policy: Quizzes will be given approximately once a week throughout the semester. They will be based on the lecture, homework and the in-class discussions. Quizzes will sometimes be assigned through WebAssign and students will be expected to complete the quiz online. There are no make-up quizzes; average will be calculated after dropping the lowest two scores.

Exams: There will be three midterm exams held in class during the semester and one comprehensive final exam. Exams are held on the following days:

Midterm Exam I	Week 4
Midterm Exam II	Week 8
Midterm Exam III	Week 11

Final Exam Period	December 14 - 20, 2019

The final exam will test your knowledge of all the course material taught in the entire course. Make sure you read and fully understand the Math Department's Examination Policy. This policy will be strictly enforced.

Makeup Exam Policy: There will be **NO MAKE-UP QUIZZES OR EXAMS** during the semester. In the event an exam is not taken under rare circumstances where the student has a legitimate reason for missing the exam, the student should contact the Dean of Students office and present written verifiable proof of the reason for missing the exam, e.g., a doctor's note, police report, court notice, etc. clearly stating the date AND time of the mitigating problem. The student must also notify the Math Department Office/Instructor that the exam will be missed.

Cellular Phones: All cellular phones and other electronic devices must be switched off during all class times.

ADDITIONAL RESOURCES

Math Tutoring Center: Located in the Central King Building, Lower Level, Rm. G11 (See: Fall 2019 Hours)

Further Assistance: For further questions, students should contact their instructor. All instructors have regular office hours during the week. These office hours are listed on the Math Department's webpage for Instructor Office Hours and Emails.

All students must familiarize themselves with and adhere to the Department of Mathematical Sciences Course Policies, in addition to official university-wide policies. The Department of Mathematical Sciences takes these policies very seriously and enforces them strictly.

Accommodation of Disabilities: Disability Support Services (DSS) offers long term and temporary accommodations for undergraduate, graduate and visiting students at NJIT.

If you are in need of accommodations due to a disability please contact Chantonette Lyles, Associate Director of Disability Support Services at 973-596-5417 or via email at lyles@njit.edu. The office is located in Fenster Hall Room 260. A Letter of Accommodation Eligibility from the Disability Support Services office authorizing your accommodations will be required.

For further information regarding self identification, the submission of medical documentation and additional support services provided please visit the Disability Support Services (DSS) website at:

- https://www.njit.edu/studentsuccess/accessibility/

Important Dates (See: Fall 2019 Academic Calendar, Registrar)

Date	Day	Event
September 3, 2019	T	First Day of Classes
September 13, 2019	F	Last Day to Add/Drop Classes
November 11, 2019	M	Last Day to Withdraw
November 26, 2019	T	Thursday Classes Meet
November 27, 2019	W	Friday Classes Meet
November 28-29, 2019	R-F	Thanksgiving Recess
December 11, 2019	W	Last Day of Classes
December 12, 13 2019	R & F	Reading Days
December 14-20, 2019	F - R	Final Exam Period

Course Outline

Week	Section and Topic		Lecture and Homework Assignments	
1	9.1: 9.2:	Three Dimensional Coordinate Systems Vectors	1	11,12,13,17,19,20,22,23,26,28,33 5,7,9,11,12,15,17,19,20
	9.3:	The Dot Product	2	2,3,4,5,9,15,16,17,19,20,21,22,29,32
2	9.4:	The Cross Product	3	7,8,9,10,11,19,21,27,28,29
	1.7: 10.1: 9.5:	Vector Functions and Space Curves	4	1,3,5,7, 13,15, 19 1,3,5,7,9,15,17 3,4,6,7, 11,17,19, 53
3	3.4: 10.2:	Derivatives of Vector Functions	5	79,81,83 9,11,13,15,17,23
	6.1: 10.2:	Integrals of Vector Functions	5	35 33,35,37,39
4	6.4: 10.3:	Arc Length and Curvature	7	7,13,16 1,2,3,17,21,22,23,27,41,43
		REVIEW FOR EXAMINATION 1		Study for Examination 1
		EXAMINATION 1		
5	9.5: 9.6: 11.1:	Functions of Several Variables	8	23,27,29,33,39,43,55,56 5,6,7,8,16,17,18,19,20,21,22 5,6,7,8,9,11,15,17
	9.7: H.1: H.2:	Polar and Cylindrical Coordinates	9	3,5,7,9,11,12,15,17,19,21(a),25 1,3,5,9,11,13,15,17,18,25,29,49,51 3,5,7,15,31,35,36
6	11.3: 11.4:	Partial Derivatives and Tangent Planes	10	15,16,17,18,19,25,26,29,30,31,39,46,56 1,2,3,5,11,12,15,21
	11.5:	Chain Rule	11	1,2,3,5,7,9,10,11,21,22,26,28
7	11.6:	Directional Derivatives and the Gradient Vector	12	5,6,7,9,11,12,15,21
	11.7:	Maximum and Minimum Values	13	5,7,9,10,11,27,29
		REVIEW FOR EXAMINATION 2		Study for Examination 2
8		**EXAMINATION 2**		
	12.1: 12.2:	Double Integration over Rectangles	14	11,12,13 3,5,7,8,12,16,17,27
9	12.3:	Double Integrals over General Regions	15	1,3,4,5,7,9,10,17,20,41,47,48
	12.4:	Double Integrals in Polar Coordinates	16	7,9,11,15,27
10	12.7:	Triple Integrals	20	3,4,5,9,11,19
		REVIEW FOR EXAMINATION 3		Study for Examination 2
11		**EXAMINATION 3**		
	13.1:	Vector Fields	21	1,3,21,24
12	13.2:	Line Integrals	22	1,3,5,7,19,20
13	13.3:	The Fundamental Theorem for Line Integrals	23	3,5,12,13,14

	13.4:	Green's Theorem	23	1,3,5,7,9
14		Review for Final Examination		
FINALS				

Updated by Professor M. Michal - 8/19/2019
Department of Mathematical Sciences Course Syllabus, Fall 2019