Beijing Jiaotong University

2019 Summer Session

MATH 300 Multivariable Calculus

Course Outline

Term: July 08-August 09,2019

Class Hours: 18:00-20:00 (Monday through Friday)

Code: MATH 300

Instructor: Ulises Fidalgo

Home Institution: Case Western Reserve University

Office Hours: TBA and By Appointment

Email: ulisesfidalgoprieto@yahoo.es

Credit: 4

Class Hours: This course will have 72 class hours, including 40 lecture hours, 10 lecturer office hours, 10-hour TA discussion sessions, 2-hour review sessions, 10-hour extra classes.

Course description and objectives: This course covers topics about multiple variable calculus such as Differentiation in Several Variables (partial derivatives, gradients, Lagrange multipliers.); double and triple integrals in several regions; line and surface integrals; and the Fundamental Theorems of vector analysis (Green's Theorem, Stokes' Theorem...). A student who completes successfully this course will be ready to apply the different techniques associated to the analysis with several variables. These mathematical tools and methods are used extensively in the physical sciences, engineering, and computer graphics.

Textbook: Calculus Early Transcendental Multivariable, 3rd Edition (Chapters from 12 to 17), authors: Jon Rogawski and Colin Adams; ISBN-13: 978-1-4641-7175-8

TESTS:

1. There will be four major tests during the semester. Each test will count 100 points. The test questions will be similar in format to the examples in class. The lowest test grade will be replaced by the final exam percentage.
2. Quizzes will be given throughout the semester. Each will count 10 points, so your ten best will

total as a 100-point grade.

3. The final examination is comprehensive and will count 200 points.

VERY IMPORTANT:

1. If a test is missed for ANY reason, a grade of 0 will be given. There will be absolutely NO make up tests given for ANY reason.
2. However the lowest of the four major test grades will be replaced by the exam percentage. Please note that the quiz grade cannot be replaced.
3. Any student who will miss one of the four tests must reschedule and take this test at a time BEFORE the test is scheduled to be given. NO OTHER rescheduling will be allowed.
4. Students must show all work for each test question and arrive at a correct answer.

FINAL GRADE:
The cumulative point total for the course is 700 points – tests: 400, quizzes: 100, final exam: 200. The following point scale will be used to determine your final grade:

Grade	Percentage	Grade	Percentage
A	93%	C+	77%
A-	90%	C	70%
B+	87%	D	60%
B	83%	F	below 60%
B	80%		

ATTENDANCE POLICY Students are allowed (5) absences. Ten (10) points are deducted from the final point total for each absence above the limit. It is the student's responsibility to make sure his/her attendance record is correct.

CALCULATORS: Your brain is a sufficient calculator in Math 111. Electronic calculators and cell phones are prohibited on tests and quizzes. No electronic devices are needed in classroom.

TENTATIVE COURSE SCHEDULE:

Week 1

Session 1: Functions of several variables. Limits and continuity.

Session 2: Partial derivatives. Differentiability and tangent planes. Quiz 1.

Session 3: The gradient and directional derivatives. Chain rule. Quiz 2.

Session 4: Test 1.

Week 2

Session 5: Optimization in several variables. Lagrange multipliers.

Session 6: Double and triple integrals over general regions. Quiz 3.

Session 7: Polar, Cylindrical, and Spherical coordinates. Quiz 4.

Session 8: Test 2.

Week 3

Session 9: Change of variables.

Session 10: Applications of multiple integrals. Quiz 5.

Session 11: Line integrals. Quiz 6.

Session 12: Test 3.

Week 4

Session 13: Conservative vector fields.

Session 14: Parametrized surfaces and surfaces integrals. Quiz 7.

Session 15: Surfaces integrals of vector fields. Quiz 8.

Session 16: Test 4.

Week 5

Session 13: Green's Theorem.

Session 14: Stokes' Theorem. Quiz 9.

Session 15: Divergence Theorem. Quiz 10.

Session 16: Review.