Math 2551 Multivariable Calculus (CRN 86908, 86909, 86910, 86787, 92282)

Georgia Tech Lorraine – Fall 2020

1. Course Description

Course Title	:	Multivariable Calculus
Lectures	:	2 times 1.5 hours / week
Recitations	:	2 times 1 hour / week

2. Instructor and TA Contact Information

Instructor	:	Dr. Philippe **Bonneau**	**Office**	:	100, 2d floor, main building
Office Hours	:	2 hours / week or by appointment			
Cell Phone	:	*to be set later*	**Office Phone**	:	*to be set later*
Email	:	philippe.bonneau@univ-lorraine.fr			pbonneau3@gatech.edu

3. TA Contact Information

Instructor	:	*to be set later*	**Office**	:	*to be set later*
Office Hours	:	1 hour / week or by appointment			
Cell Phone	:	*to be set later*	**Office Phone**	:	*to be set later*
Email	:	*to be set later*			

3. Pre-Requisites

MATH 1502 OR MATH 1512 OR MATH 1555 OR MATH 1504 ((MATH 1552 OR MATH 15X2 OR MATH 1X52) AND (MATH 1522 OR MATH 1553 OR MATH 1554 OR MATH 1564 OR MATH 1X53))

4. Textbook

Thomas, Calculus: Early Transcendentals 14th edition by Addison-Wesley (Pearson).

We will roughly cover Chapters 12 through 16 of the textbook.

5. Course Websites & Additional Materials/Resources

Course Website: canvas.gatech.edu

Canvas will be used for course grades, announcements, and course-related documents.

Office hours are important for discussing material covered in class, getting help to solve homework assignments, asking for specific or personalized help, and discussing about difficulties. *Please come to office hours.* If you cannot come at the fixed schedule, we can fix an appointment at a different time. Additional practice material and extended office hours will be offered prior to tests and to the final exam.

Piazza: (enroll via Canvas)

The Piazza forum is highly catered to getting your help fast and efficiently from classmates, the TAs, and myself. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza if your questions have nothing to do with your privacy. You may post on Piazza anonymously if that makes you more comfortable. Everyone in class should feel absolutely free to ask questions, discuss, help, comment, explore, and exchange ideas on Piazza.

The only restriction I like to impose on Piazza is: **please do not discuss exam problems and solutions**. Of course you are welcome to discuss them with me and your TA in private.

6. Course Requirements & Grading

5 Quizzes (15 minutes), 2 Tests (50 minutes), and a comprehensive Final Exam (2 hours 50 minutes)

6.1 Homework

Homework will be assigned every week and will consist of exercises from the textbook. It might be collected (to discuss with the TA) but not graded. You are expected to understand all homework problems for quizzes, tests and the exam.

6.2 Quizzes

There will be 5 short quizzes of about 15 minutes, all given at the beginning of the second recitation of the scheduled week. Their tentative dates are on the last page of this syllabus. Quizzes cover material up to and including the last lecture of the week before. Quizzes consist of questions similar to recent homework with posted solutions. Solutions to quizzes and tests will be posted on the course website. The lowest quiz grade will be replaced by the average of all the quizzes. The quiz replacement does not apply to students who get zero due to cheating.

6.3 Tests

There will be two 50-minute tests, given at the beginning of the second course of the scheduled week (in the room where the lecture meets). Their tentative dates are on the last page of this syllabus.

6.4 Final Exam

The Final Exam is comprehensive. Its duration is 2 hours and 50 minutes. It will be given in the lecture room (as per institute policy). Its date and time will be fixed by the registrar and cannot be modified (Finals Week is Dec 3-10). See http://www.registrar.gatech.edu/students/exams.php

6.5 Participation

A subjective assessment will be based on your participation in the course examples include attendance, preparation, quality of work handed in, creativity, progress of test scores, participation in classroom discussion (engage, lead, listen, inquire, challenge, respect, etc), engagement in/commitment to course, outlining alternative methods to solve a problem, solving challenge problems. Throughout the semester a variety of participation activities will be integrated into lectures and recitation sessions. Their purpose is to encourage active learning, foster community among students, offer feedback to the instructor on student understanding and course activities, and help students become more aware of their level of understanding of the course material. Participation activities will not be held in the first and last weeks of the semester. They will only be graded for completion (not for accuracy).

6.6 Exam/Quiz Rules

- Calculators, cell phones and other devices are not allowed during quizzes, tests and the final exam.
- Quizzes, tests and the final exams are closed notes, books, etc.
- In tests and in the final exam, unless you are asked to use a particular method or theorem, you are allowed to use any approach to solve the problems.
- Unless indicated otherwise, you must adequately justify your reasoning for full marks.
- Marks can be taken off in a test or final exam for not using the correct notation.
- Graded student quizzes and exams will be returned within one week.

6.7 Description of Graded Components

Your course average will be the highest of the following two numbers:

Weighted Average One		Weighted Average Two	
Participation	8%	Participation	8%
Quizzes	22%	Quizzes	22%
Tests	40%	Higher Test	30%
Final Exam	30%	Final Exam	40%

6.8 Grading Scale

Your final grade will be assigned as a letter grade according to the following scale:

A	[90% , 100%)
B	[80% , 90%)
C	[70% , 80%)
D	[60% , 70%)
F	[0% , 60%)

7. Learning Outcomes and Topics

7.1 Course Content

Math 2551 is an introduction to multivariable calculus. Topics include:

- Vectors and the Geometry of space, vector calculus, parametric curves and motion
- Functions of several variables, visualization and partial differentiation, gradients, optimization, Lagrange multipliers, linear approximation, tangent planes, differentials
- Double and triple integrals, applications
- Vector analysis including the theorems of Green, Gauss, and Stokes

7.2 Learning Outcomes

The primary goal of Math 2551 is prepare students to succeed in upper level courses that require this course as a pre-requisite. Upon successful completion of the course, students will be able to:

- understand and demonstrate the basic theory of calculus of function in several real variables;
- evaluate partial derivatives and multiple integrals; compute line integrals and surface integrals;
- apply the knowledge to solve some practical problems, such as constrained optimization problems and other problems involving differentiation and integration of multivariable and vector-valued functions.

8. Course Expectations & Guidelines

8.1 Attendance

In the event of an absence, you are responsible for all missed materials, assignments, and any additional announcements or schedule changes given in class.
Class disruptions of ANY kind will NOT be tolerated and may result in your removal from the classroom. Please show courtesy to your fellow classmates and instructor by adhering to the following class rules.
Come to class on time and stay for the entire class period.
Refrain from conversing with your fellow students while the instructor is lecturing.
Put away any reading materials unrelated to the course.
Cell phones should be silent and put away during classes.
Devices like tablets or laptops can be used for the only purpose of taking notes, as long as this is not distracting to the other students.
Please do not bring food to eat during lectures, eating is a distraction to others.

8.2 Academic Dishonesty

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit http://www.catalog.gatech.edu/policies/honor-code/ or http://www.catalog.gatech.edu/rules/18/. Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

8.3 Students with Disabilities and/or in need of Special Accommodations

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)894-2563 or http://disabilityservices.gatech.edu/, as soon as possible, to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a

time to discuss your learning needs.

8.4 Re-Scheduled/Missed Exams

NO MAKE-UP EXAMS! In general, no make-up exams will be given and any missed exam results in a "0" score.

- If you have a valid reason to request a make-up exam, please contact the instructor as early as possible. Only extraordinary cases will be considered.
- In the case of SERIOUS illness, please contact me BEFORE the exam and get a doctors note.
- In the case of emergency, please contact the Office of Dean of Students immediately.
- Requests for student organization excused absences must be made no later than two weeks prior to the date of the event. No late requests will be honored. Please have your advisor send me a written notice or an e-mail.

8.5 Regrading Requests

Any regrading request should be submitted to me (not to the TA), with the graded exam in the original unaltered form, within one week of the date the exam has been returned to the class. Please do not write ANYTHING on the original graded exam.

8.7 Student-Faculty Expectations Agreement

At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgment, and responsibility between faculty members and the student body. See http://www.catalog.gatech.edu/rules/22/ for an articulation of some basic expectation that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

9. Statement of Intent for Inclusivity

As a member of the Georgia Tech community, I am committed to creating a learning environment in which all of my students feel safe and included. Because we are individuals with varying needs, I am reliant on your feedback to achieve this goal. To that end, I invite you to enter into dialogue with me about the things I can stop, start, and continue doing to make my classroom an environment in which every student feels valued and can engage actively in our learning community.

10. *Tentative* Course Schedule

Date	Section Coverage	Exercises
8/18 - 8/21	12.2, 12.3, 12.4	**12.2** 17, 23, 37, 43, 49 **12.3** 13, 25, 35 **12.4** 11, 15, 19, 31, 35
8/24 - 8/27	12.5, 13.1, 13.2 **Quizz 1**	**12.5** 9, 17, 23, 37, 61 **13.1** 11, 19, 23 **13.2** 3, 19, 25
8/31 - 9/3	13.3, 13.4, 13.5	**13.3** 5, 7, 13 **13.4** 3, 9 **13.5** 5, 13, 21
9/7 - 9/10	14.1, 14.2, 14.3 **Quizz 2**	**14.1** 5, 11, 13, 29 **14.2** 3, 7, 19, 39 **14.3** 11, 13, 17, 47, 53, 63, 71
9/14 - 9/17	14.4 14.5, 14.6	**14.4** 5, 29, 37 **14.5** 13, 23, 29 **14.6** 9, 17, 31, 42, 47
9/21 - 9/24	14.7 **Test 1**	**14.8** 3, 15, 19, 25 **14.7** 13, 17, 33, 37
9/28 - 10/1	14.8, 14.9	**14.9** 1, 5, 11
10/5 - 10/8	15.1, 15.2, 15.3 **Quizz 3**	**15.1** 7, 13, 22 **15.2** 5, 9, 35, 43, 47, 63 **15.3** 3, 13, 21
10/12 - 10/15	15.4, 15.5, 15.6	**15.4** 11, 21, 23, 29 **15.5** 13, 19, 25, 35, 41 **15.6** 7, 17, 25, 31
10/19 - 10/22	15.7, 15.8, 16.1 **Quizz 4**	**15.7** 5, 9, 17, 31, 37, 51, 55, 69 **15.8** 3, 9, 13, 21 **16.1** 11, 19, 29, 33
10/23 - 11/1	RECESS	RECESS
11/2 - 11/5	16.2 **Test 2**	**16.2** 3, 9, 17, 21, 23, 27, 41, 57 **16.3** 9, 15, 29
11/9 - 11/12	16.3, 16.4	**16.4** 7, 13, 25, 29, 31
11/16 - 11/19	16.5, 16.6, 16.7 **Quizz 5**	**16.5** 9, 11, 21, 43 **16.6** 3, 13, 17, 27, 31 **16.7** 9, 17, 21
11/23 - 11/26	16.8	**16.8** 11, 15
11/30 - 12/1	Last Class	Review
04/23 - 04/29	Final Exam Period	**To be fixed by the end of September**

Some Important Dates

August 18	First Day of Classes
To be set later	Progress Report Deadline
Oct. 21 (or 22)	Test 1
To be set later	Withdrawal Deadline
Oct. 23 – Nov. 1	GT-L Recess
Nov. 4 (or 5)	Test 2
Dec. 3 – Dec. 10	Final Exam Period

For further information on campus-wide dates see http://www.registrar.gatech.edu/calendar
The schedule of the final exam will be fixed by the registrar by the end of September and is non negotiable.
See http://www.registrar.gatech.edu/students/exams.php

This syllabus provide a general plan for the course; deviations may be necessary.

Acknowledgement:
To write this syllabus I profited of the help of a few colleagues who kindly took the time of explaining me the rules and expectations at GT and GT-L. For this, my thanks go to Shuenn Siang Ng, Salah Mehdi, Angela Pasquale and to Bertrand Boussert, director of academic programs at Georgia Tech Lorraine. Special thanks go to Shuenn Siang Ng for all the material he kindly sent to me about the structure of this course: my course is mostly based on it.