

Multivariable Calculus 3 Honors Course Syllabus

Mrs. Cathy Doxtater
catherine.doxtater@houstonisd.org
(281) 920-8000, ext. 036210
Room #: E121
Class Meeting Times: 6th Period
Conference Period: 4th Period

Tutorial Times: Monday lunch, 11:45 a.m. – 12:15 p.m.
Thursday lunch, 11:15 – 11:45 a.m.
Most mornings 7:00 – 7:30 a.m.
No Tutorials: 1st Tuesday lunch (*NHS Officer Mtg. days*)
2nd Tuesday lunch (*NHS Chapter Mtg. days*)
Test Days (*encourages cramming*)

Resources and Materials:

- Textbooks: Primary – Larson, Calculus, 8th edition
- TI-89 Graphing Calculator (*provided, BRING EVERY DAY*)
- **Organized** binder (MATH only) with COLLEGE-RULED paper and dividers (lesson and assignment schedules, handouts, homework, lessons, enrichment presentations, quizzes)
- **Example journal** (where all text example problems are to be worked out)
- PENCILS (***all work is to be done in pencil***), as well as a pen (*for corrections on homework*)

Course Description/Objectives:

- Overview: Calculus is a study of change incorporating all previously studied math concepts. Calc 3 expands study beyond functions of a single variable to functions of two and three variables.
- Content:
 - Vectors and the Geometry of Space – 1st Six Weeks
 - Vectors in the Plane, Space Coordinates and Vectors in Space, The Dot Product of Two Vectors, The Cross Product of Two Vectors in Space, Lines and Planes in Space, Surfaces in Space, Cylindrical and Spherical Coordinates
 - Vector-Valued Functions – 2nd Six Weeks
 - Vector-Valued Functions, Differentiation and Integration of Vector-Valued Functions, Velocity and Acceleration, Tangent Vectors and Normal Vectors, Arc Length and Curvature
 - Functions of Several Variables – 3rd Six Weeks
 - Limits and Continuity, Partial Derivatives, Differentials, Chain Rules for Functions of Several Variables, Directional Derivatives and Gradients, Tangent Planes and Normal Lines, Extrema of Functions of Two Variables and Applications, Lagrange Multipliers
 - Multiple Integration – 4th Six Weeks
 - Iterated Integrals and Area in the Plane, Double Integrals and Volume, Change of Variables: Polar Coordinates, Center of Mass and Moments of Inertia, Surface Area, Triple Integrals and Applications, Triple Integrals in Cylindrical and Spherical Coordinates, Change of Variables: Jacobians
 - Vector Analysis – 5th Six Weeks
 - Vector Fields, Line Integrals, Conservative Vector Fields and Independence of Path, Green's Theorem, Parametric Surfaces, Surface Integrals, Divergence Theorem, Stoke's Theorem
 - Additional Topics – 6th Six Weeks
 - TBD
- Instructional methods: discovery, group work, occasional brief lectures. Students will discuss and present to each other each section. The class will be seminar-style and students will be responsible for the depth and richness of this course.
- Goals: critical reading, analytical thinking, creative synthesis and problem-solving, and attention to detail regarding all Single-Variable and Multi-Variable Calculus topics, and beyond
- Objective: preparation for college options
- Major work: Homework, Quizzes, CalPAL performance, Enrichment Presentations, Class Participation, Exams

Course Calendar/Schedule:

- Assignments: Homework, Presentations, as stated on assignment schedule
- Due dates:
 - Homework is due the class following the lesson!!! If you do not have it, you are not ready for the next material to be discussed, and will be letting down your classmates
- Quizzes will usually be unannounced – be prepared at any time for an evaluation of your progress
- Exams as stated on the assignment syllabus → ***DO NOT MISS AN EXAM!!! Most exams will be worked collaboratively, so missing one denies you this option!***

Course Policies:

▪ Attendance:

- **You cannot learn when you are not here.** Second-hand information cannot replace in-person learning and activities. Please collaborate with peers for information when you have missed class. I will not personally reteach the lesson to you.
- If you know **prior** to missing a test that you will be absent for any reason (college, medical, school activity, etc.), please make arrangements with me ahead of time to re-schedule your test!! **If you are unexpectedly absent on test day, please communicate with me promptly via email prior to your class period** so that we can schedule your test.
- In college, a missed test is a “0.” Do not let this behavior become a pattern as it will become a serious problem.

▪ Tardies:

- These will affect your performance in this course; please make every effort to be on time to class.
- Quizzes will usually begin as soon as the tardy bell rings, so if you are tardy, you will lose time allocated for the quiz, or miss the quiz completely. No make-ups on quizzes.

▪ Class Participation:

- You will regularly present work on the board and work cooperatively with your peers. It is the one thing we do that will help you learn. We celebrate learning from making mistakes! This is where you learn to think for yourself.
- This class will run less like a lecture-based course, and more like a seminar course. You will need to learn how to really READ a math textbook, which includes working all examples in the text, and to do independent work to begin to understand the concepts that are a part of this curriculum. You will participate with your peers as you master the curriculum together. You will also work in teams at the end of each chapter to present applications of the topic learned.

▪ Make-ups:

- No make-up on homework. It is due the next class. It is the foundation for the next lesson. The entire class suffers whenever even one classmate is unprepared for the class meeting, and the class will hold the classmate responsible.
- No make-ups on quizzes. I will usually drop 1 quiz grade; your missed quiz will be the dropped grade.
- *If you know you will miss an exam prior to its administration, and you make arrangements with me **AHEAD OF TIME** to take the exam, you will be permitted to take the original exam as long as it is taken within 24 hours (1 weekday) of its original administration.*

▪ Re-Tests:

- These should not be entertained as a viable option in Calculus 3 because this is a college-level course and there are no such things as “re-tests” in college. Also, since you take tests collaboratively, there is not justification for this opportunity.
- Honestly, if you are working as you should in class and are prepared each day, and can contribute to class activities regularly, you will perform fine on each test. Worry about learning. Let me worry about your grade.

▪ Cheating:

- **If you cannot explain your work that you bring to class, it will be clear that you did not do your work yourself!** If you have done the work YOURSELF (i.e., you have not had a tutor coach you through it, nor have copied it from internet resources or someone else), you will know what you did and be able to explain it to others. I expect you to work together on almost everything, because this is how you learn. That being said, you know when you have crossed the line.
- **If you discuss ANY part of a quiz or test with a peer who has not yet taken it, YOU ARE CHEATING.**
- Other examples of cheating include, but are not limited to: copying someone’s homework or in-class assignments, copying work/answers from the internet, using a pencil when we are checking work, letting someone copy your work, having someone else’s homework paper, using a cheat sheet for a quiz or test, etc. **You know what cheating is.**
- **Trust is very difficult to rebuild. Please do not put yourself in this position. No grade is worth it.**

▪ Expected Behavior:

- Respect for instructor, peers and yourself
- Honesty, integrity, exemplary character
- Participation in classroom activities
- Conscientious performance as a CalPAL tutor for the AB and BC Calculus students. One 40-min session per week.
- Completion of all homework assignments; review next lesson prior to attending class
- **Use of PENCIL for homework, quizzes and tests**
- Present and on time to class with all necessary supplies
- Participation in independent study groups (this is the first step to academic success and excellence)
- Working diligently with your peers when you need help
- Leaving Mrs. Doxtater’s stuff in the same or better condition in which you found it

- Handle your concerns with maturity and responsibility → **please communicate with me prior to allowing a problem (academic or personal) get out of hand, this includes correspondence with your parents.** *I will not be having continual conversations with your parents about your performance in this class. None of you had this issue in BC Calculus, so I don't expect it to be one this year. However, you must develop mature independence and learn how to properly advocate for yourself so that you can do it when you get to college, and I am here to help you do that!!*

- **Unacceptable Behavior:**
 - Not having your work ready for class and therefore, not being able to participate in daily class activities
 - Profanity (verbal, physical, symbolic or written)
 - Cheating in any form (including copying homework)
 - Disrespect or general surliness
 - Sleeping or non-participation during class activities
 - Not taking care of this space (trash, writing/gum on desks, unfolded blankets/sweaters, etc.)
 - Incomplete or non-existent homework assignments
 - Fishing for hints during exams – this is **my** day to ask **you** the questions
 - Absence from class, **especially if there is a recurrence, or pattern, on test days**
 - Removing **anything** from the classroom which is not yours
 - Asking for extra credit work to “bring up your grade.” There will not be. Do your work as expected, on time.
 - Grade grubbing (disputing each point on a graded activity). I put a great amount of time into both creating and assessing all quizzes and tests, as well as the very occasional graded homework.
 - Telling me that you must have a “(fill in the grade)” for a particular university, college program, or scholarship. It is your responsibility to be in my room regularly, mastering the course material if this is a concern for you. Please do not ask me to give you this necessary grade when you have not earned it as this action would call into question my integrity.

- **Grades:**
 - Overall Six Weeks Average determined by:

▪ Homework/Classwork/Lessons/Other	10%
▪ Quizzes/Other	10%
▪ CalPAL	10%

 - CalPAL: *Calculus 3 students have a unique advantage over all other math students at WHS. Besides having the opportunity to take a Multivariable Calculus course while in high school, you will have a greater understanding of how important the topics from AB and BC Calculus are than you had while taking BC, and you are uniquely equipped to help guide students in those courses. You will be available for hands-on tutoring as scheduled (according to your availability and student need) before school, during lunch or after school each week.*
 - Exams/Enrichment Presentations/Other 70%
 - Enrichment Presentations: *At the end of each unit (approximately the last 2 weeks of each 6-week cycle), students will work in teams to research and present real-world applications of the topics most recently studied.*

Students will be issued a TI-89 Calculator and a textbook for the course, to be returned at the end of the year. It is the student's responsibility to replace batteries. If either of these is lost or damaged, you are expected to replace it prior to the end of the school year or grades will be held.

We have read and understand the Multivariable Calculus 3 Honors Course Syllabus, and the textbook/calculator policy:

Student Name (printed): _____ Class Period: _____

Student Signature: _____ Date: _____

Student email: _____

Parent Signature: _____ Date: _____

Parent email: _____

If possible, please donate one or more of the following: Kleenex, AAA Batteries, Expo Dry Erase Pens, Hand Sanitizer