

Times² Stem Academy

Calculus I - Course Syllabus 2017 – 2018

Mr. Lay

Room: TBA

Phone: 401-272-5094

E-mail: llay@times2.org

Course Description:

Calculus is a full-credit course offered to seniors. This course is primarily concerned with developing the students' understanding of the concepts of calculus and providing experience with its methods and applications. The course emphasizes a multi-representational approach to calculus, with concepts, results and problems being expressed graphically, numerically, analytically and verbally. The connections among these representations also are important. Broad concepts and widely applicable methods are emphasized. The focus of the course is neither manipulation nor memorization of extensive taxonomy of functions, curves, theorems or problem types. Thus, although facility with manipulation and computational competence are important outcomes, they are not the core of this course.

Technology should be used regularly by students and teachers to reinforce the relationships among the multiple representations of functions, to confirm written work, to implement experimentation, and to assist in interpreting results. Through the use of the unifying themes of derivatives, integrals, limits, approximation, and applications and modeling, the course becomes a cohesive whole rather than a collection of unrelated topics. This curriculum has been developed in consultation with post-secondary institutions and is deemed conducive to student success in collegiate calculus courses.

These themes are developed using all the functions covered in the Grade 11 Pre-calculus course. These functions include, but are not limited to, linear, quadratic, exponential, and trigonometric.

Course Outcome:

- Interpret functions represented in varieties of ways: graphical, numerical, analytical or verbal
- Convert among the above mentioned representations.
- Describe the concept of the derivative as a rate of change across varieties of contexts.
- Compute or approximate the derivative given graphical, analytical, numerical representations of functions.
- Describe the concept of definite integral both as a limit of Riemann sums and as the net accumulation of change across varieties of contexts.
- Compute or approximate definite integrals given graphical, analytical, numerical representations of functions.
- Solve problems related to the relationship between the derivative and the definite integral as expressed in both parts of the Fundamental Theorem of Calculus.
- Communicate mathematics and explain solutions to problems both verbally and in written sentences.
- Model a written description of a physical situation with a function, a differential equation or an integral.
- Use technology (specifically graphing calculators) to help solve problems, experiment, interpret results and support conclusions.
- Explain the reasonableness of solutions, including sign, size, relative accuracy and units of measurement.
- Describe the role of calculus as a coherent body of knowledge and as a human accomplishment.

Resources:

Textbook: Calculus of a single variable 7th .ed. by Larson, Edwards, & Hostetler
Graphing calculators, computer programs (GeoGebra and WinPlot) and lecture notes.

Grade Distribution:

Grades: I do not give grades. Students earn grades. Grades in my class are based on three things:

Classwork	15%
Participation	15%
Homework	25%
Tests/Quizzes/Projects	45%

You are expected to complete **ALL** work assigned every day, to be **IN CLASS** every day, and to **bring a note if you must be absent for an emergency reason. If you are absent without an excuse, you may receive a zero for every assignment you missed unless you make it up AFTER SCHOOL.** It is **YOUR RESPONSIBILITY** to come after school to make up any missed work!

UNIT TESTS/ CLASS PARTICIPATION/ NOTEBOOK/ IN-CLASS

- If **ABSENT** for Unit Test, must make-up after-school – It **IS YOUR RESPONSIBILITY!**
- Failing grades on Tests (less than 60%) will be required to be made-up after-school.
- Must attend classes **EVERY DAY**. If Absent, must see teacher **AFTER** school for any make-up work. (Note: Class cutting = **ZERO CREDIT** and no work may be made up!)
- Any disciplinary problem which interferes with the learning process = No credit for the day and referral to administrator.
- **NOTEBOOK** – Your “Notebook” will be a 3-Ring Binder which you **MUST** have with you **DAILY!!** Notebook checks will occur regularly and will count as a Test grade each quarter.
- You are expected to take **NEAT** and **ORGANIZED** notes containing definitions, explanations, examples given in class, etc. as part of your Class Participation.
- **ASSIGNMENTS/ ACTIVITIES (as assigned) – with work shown.**

----- Pleases! Return upon completion. Thanks -----

Student's Name (print) & Signature

Parent/Guardian Signature

Contact Name/Relationship to Student (Please Print): _____

Phone#: _____ E-mail: _____