AP Calculus AB Syllabus

Ms. Seigle

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Locust Grove High School Wildcats



COURSE DESCRIPTION:

This is an AP Calculus class with two goals. The first goal is to learn material presented in a college-level Calculus I class. The second goal is to achieve a score on the AP Exam given by the College Board in May that is good enough to obtain college credit. Students should be motivated and possess excellent study habits as well as a talent in mathematics to properly succeed.

The primary emphasis is to teach the student to develop an intuitive understanding of concepts of calculus and its models and applications. The student must apply theorems and learn definitions, but formal proofs are mostly left to courses in college. Communication in this course is important, however, as students are expected to give written justification for many of the processes used throughout.

Students will be taught using the "Verbally NAG" method, also referred to as the rule of four: verbally, numerically, analytically, and graphically. Graphing utilities, mainly the TI-Nspire, will be used daily. Spiraling is used to make connections to previously-learned topics, including those from past math courses. The textbook is utilized as a resource for practice problems, both in and outside of class, and should therefore be brought to class each day. Previous AP Exam questions are also utilized extensively throughout the course.

- AP Exam: Students are expected to take the AP Calculus AB Exam, which will be administered on the morning of Tuesday,
 May 14th. The cost will be around \$94, but subsidies may be available. Information on the format of the exam will be provided throughout the year.
- Textbook:Calculus of a Single Variable, AP Edition, 10th edition, Cengage Learning, 2017.The replacement cost is \$140.50.

COURSE CONTENT & UNITS:	*The time allotted for each topic is approximate only

FIRST SEMESTER (ends at Winter Break)

ТОРІС	TIME *	CHAPTER
Limits/Squeeze Theorem/Continuity/Asymptotes	2.5 weeks	chapter 1
Formal Definition of a Derivative	1 week	chapter 2
Derivative Properties/Product Rule/Quotient Rule	1 week	chapter 2
Derivatives of Trig Functions/L'Hopital's Rule/Chain Rule/Implicit Diff	2.5 weeks	chapter 2
Related Rates	2 weeks	chapter 2
Extrema/Rolle's Theorem/Mean Value Theorem/1 st	3 weeks	chapter 3
and 2 nd Derivative Test/Concavity/Curve Sketching		
Optimization/Differentials/Linear Approximations/Particle Motion	2 weeks	chapter 3
SECOND SEMESTER (ends at Summer Break)		
TOPIC	TIME *	CHAPTER
Summation/Antidifferentiation Introduction/Riemann Sums/	3 weeks	chapter 4
Rectangle approximation (left, right, midpoint) and Trapezoidal		
Properties of Definite Integrals/Fundamental Theorem of Calculus/	2 weeks	chapter 4
Average Value/U-Substitution/Particle Motion Revisited		
Natural Log Properties/Derivative of Natural Log/Applications/	2 weeks	chapter 5
Integrating to get Natural Log/Integrals of Trig Functions		
Natural Exponential Function Properties/Derivative and Integral	2.5 weeks	chapter 5
of Base "e"/Exponential Growth and Decay/Derivatives of		
Inverse Trigs/Integrals Involving Inverse Trigs		
Slope Fields/Differential Equations/Separation of Variables Technique	1.5 weeks	chapter 6
Area Between Curves/Volume of 3-D Figures (disk, shell, known	3 weeks	chapters 7/8
cross-sections) Techniques of Integration/Integration by		

Parts/Integrals of Higher Degree Trigs

GRADING:

Grading will be completed using percentage-correct method. You must show all work (even if you use a calculator) to ensure full credit is received for correct answers. Students will receive progress reports throughout the year; however, credit for successful completion of the course will not be awarded until the end of the school year. Letter grades will be assigned according to a student's current average in the course, including the county-added (10) AP points:

A = 90 - 100 B = 80 - 89 C = 74 - 79 D = 70 - 73 F = 69 or below

Points for Typical Assessments will generally follow this scale:

Free Response Packets (FRQs)	15%
Classwork / Homework / Quizzes	20%
Tests / Projects	45%
Exam	20% of average

- All work must be completed in **pencil**.
- Some late assignments will be accepted for a maximum of half credit only; *FRQs, Test Corrections, and Projects are <u>not</u> accepted late for any reason.*
- You must show all work (even if you use a calculator) to ensure full credit is received for correct answers.
- All decimal answers must be accurate to three decimal places.
- Assessments are mean to gauge the level of mastery within a given time frame. For this reason, if a major unit test grade is higher than its corresponding quiz, the test grade can replace the quiz grade because it would demonstrate an increase in the level of mastery within the allowable time frame. *Note: missed quizzes will not be made up; instead, the corresponding unit test grade will also be used for the missed quiz grade.*
- Out-of-School Suspension (OSS) may prevent a student from making up work missed during the suspension.

CLASSROOM POLICIES & PROCEDURES:

Warm Ups:

Students are expected to immediately begin the warm-up activity as they enter the classroom, which may be a "Problem of the Day," activity, or reading assignment. Reading mathematics and utilizing correct mathematics vocabulary will be stress at all times. Warm-up activities may reference past, current, or future topics, and are a great resource when reviewing for tests or quizzes.

Participation:

All students are encouraged and expected to ask questions and participate in class discussions.

Homework:

Homework is an essential part of the learning process for mathematics and will therefore be assigned daily. A mixture of taskrelated, textbook-based, and old AP test problems will be used to help students master the content. <u>All work and steps must be</u> <u>neatly shown—in pencil—for each problem</u>. Homework may be checked either for accuracy or completion, but will not always be graded. The frequency of these checks and grades is at my discretion.

Free Response Questions (FRQs):

In addition to daily homework assignments, students will have Free Response Questions (FRQs) beginning towards the end of August. *Guidelines for preparation of these problems are attached and <u>must</u> <i>be followed.* All of the problems are from previous AP Exams. Any questions prior to 1995 are to be completed WITHOUT A CALCULATOR. Students are allowed to discuss these problems with each other; in fact, such discussions are encouraged. Students will only be able to seek my assistance on FRQs outside of class time; I will not spend class time on these problems. FRQs will generally be due on Fridays and will be graded on a nine-point scale (per question). Students will be given about 7 days to complete each FRQ Packet. FRQs are not accepted late for any reason.

Quizzes:

Quizzes will be given throughout the year to assess current mastery of skills. The quizzes may be given on an announced or unannounced schedule. Quiz grades may be replaced by corresponding test grades if improvement is evident. Missed quizzes will not be made up; instead, missed quizzes will be replaced with the corresponding test grade.

Tests:

There will be 1-3 major tests each unit. A student who is absent from school the day before an announced test will be held responsible for taking the test at the scheduled time, as they would have only missed a review. If a student is absent on a test day, s/he must immediately schedule a makeup test. Tests will be cumulative and will contain content from previous units to help ensure year-long retention of concepts.

Final Exam:

The mid-year and final exams are cumulative. I highly recommend reviewing past material periodically so you are not overwhelmed reviewing in December and May.

Attendance:

Attendance is extremely important, especially in an AP course. It is the responsibility of the student to make arrangements for missed work or assessments, and to secure any notes from classmates. Please utilize my teacher page, Remind, and email regularly to remain up-to-date on class material.

My Availability:

I am more often available after school or during IF/Advisory for tutoring Q & A sessions; however, afternoon bus duty, meetings, practices, or conferences will affect my availability. I try to post the days I'm unavailable on the classroom board, but you can always email, send me a message through REMIND, or simply ask me during class to be sure; in fact, please do try to let me know your plans in advance to be certain I am available.

Restroom / Hall Passes:

No passes will be issued during the first or last 10 minutes of the class period. AP Calculus students are expected to maximize learning time by being present and attentive for the duration of each and every class period. Unforeseen emergencies will be handled on an individual basis.

SUPPLIES:	
Notebook:	Students should utilize a 3-ring binder organized with dividers by Unit Name (7 units).
Pencils:	All assignments must be completed in pencil. (Note: #2 pencils may be required for certain assessments)
Paper:	Loose leaf notebook paper (college or wide ruled). Graphing paper will be helpful, as well.
Calculator:	TI-Nspire Handhelds will be used throughout the year. Although a class set will be available for in-class use and students without existing fines may check-out a graphing device (under separate agreement) for the year, students could greatly benefit from owning their own graphing device. <i>Please consult the Math Department or potential college before purchasing an expensive calculator!</i>
Technology:	Wi-Fi Capable Device for BYOT (Bring Your Own Technology). <i>Such devices are optional but greatly encouraged.</i> Additionally, ear buds and a thumb drive or similar mobile storage device may be helpful.
DONATIONS:	Tissue and Hand Sanitizer are always needed; also, dry erase markers for our individual white boards are always in short supply. If you are able to donate for the class at any point during the year, I would greatly appreciate it!

CLASSROOM RULES:

- 1.) Be on time
- 2.) Be prepared
- 3.) Listen and pay attention
- 4.) Be respectful of others
- 5.) Speak respectfully to others
- 6.) Obey all school rules

<u>NOTICE</u>: TEACHER RESERVES THE RIGHT TO CHANGE OR ADJUST ANY SECTION OF THE COURESE SYLLABUS DURING THE SCHOOL YEAR WHEN THE NEEDS, ABILITIES, AND INTERESTS OF THE STUDENTS INDICATE SUCH CHANGE IS NECESSARY.

Dear Students,

Understanding the following bulleted points will help you achieve success in AP Calculus:

- Calculus is likely to require a substantial investment of time. You should work on calculus every day, regardless of whether or not you have an assignment due.
- One of the best ways to learn anything is to explain it to someone else, and working in groups—both in and outside of class—is an excellent opportunity for doing so. **Study groups are encouraged**.
- Many problems cannot be solved with a simple application of a "formula." Understanding the process for solving a particular type of problem is emphasized in this class over memorizing formulas. If you understand the concepts, memorizing a formula becomes unnecessary.
- During class, I will go over important examples which may not be in your textbook. Pay attention in class and take notes. You will also need to read your notes to ensure understanding, and **revisit your notes regularly to ensure retention**.

Dear Parents,

This is a challenging college-level course, and it is important that your student review the requirements of the class and plan appropriately. Regular class attendance is essential; likewise, the student must do his or her homework consistently. A central component to succeeding in this course is the responsibility of the student to keep up with the presented material. It can become a "mission impossible" to try and makeup neglected work, regardless of the reasons, please encourage your child to seek help promptly should s/he encounter difficulties. Help is available.

As we approach the AP Calculus AB Exam in the spring, additional practice sessions outside of class time will be initiated and students should plan to participate. Some other activities may need to be curtailed in order to make room for calculus during this time. Please be aware and plan accordingly because overextended students may have difficulties finding the same level of success to which they are accustomed.

Please check in with your student frequently, monitor his/her grades on Infinite Campus, and contact me should you have any concerns: <u>danna.seigle@henry.k12.ga.us</u>. I will respond promptly.

I am looking forward to a great year!

Danna Seigle danna.seigle@henry.k12.ga.us

PLEASE RECORD MY CONTACT INFORMATION FOR USE THROUGHOUT THE SEMSTER:

Email: <u>danna</u> Teacher Page REMIND Not	.seigle@henry.k12.ga.us : <u>http://schoolwires.henry.k12.ga.</u> ifications:	us/Page/31014 \rightarrow QR Code:
	To receive messages via TEXT, text 81010 with :	To receive messages via EMAIL, send an email to the following (subject and body can be blank):
	@seigle4 (4 th period)	seigle4@mail.remind.com (4 th period)

** Pgs 1–5 of the syllabus should be kept in student's notebook. Pg 6 must be signed by Parent and Student and returned by Fri, Aug 3rd.**

After reading the attached 4-page syllabus for <u>Ms. Seigle's AP Calculus Class</u>, both student AND parents/guardians need to acknowledge below that same has been read and understood.

This signature page (pg 6) will need to be returned to Ms. Seigle by Friday, August 3rd. **NOTE: Pages 1-5 of the syllabus should be kept in the student's notebook. Once signed and returned, a copy of this signature page will also be provided to the student.**

Guidelines for Preparation of Free-Response Question (FRQ) Assignments

<u>FRQ assignments</u> **must** adhere to the following instructions (all other homework assignments are more flexible in format). These instructions are intended to provide you with some basic guidelines to creating organized, legible, and professional-looking homework.

Paper:

- Use standard size (8 ½" by 11") paper (not tracing paper, colored paper, sheets from a spiral notebook, or the back side of previously used paper).
- Emphasis is on readability and accuracy. Use a pencil. Do not cross out errors; erase them.
- It is not necessary to include every detail of a problem solution, but enough details, steps, and words must be included so that the logic is clear and someone else can readily check the problem solution.

Format:

- Make each problem self-contained. Start each new problem on a new page. A page is one side of a sheet of paper. It is acceptable to place more than one problem on a sheet (one on the front, one on the back).
- Label each problem separately. The problem year and number should precede your work on the line above where your work begins. Working below the printed problem is preferred.

Each problem:

- Write down equations to be used in generic form before expanding them into problem specific from.
- Draw a diagram whenever appropriate. This is MANDATORY.
- Indicate the method of solution, any assumptions or approximations made, and justify your answer where appropriate or required.
- Identify answers clearly. Remember that an answer is not complete without expressing the appropriate units.
- All decimal answers must be correct to three decimal places.
- Calculators are NOT allowed unless specifically stated.

Turn in:

- Arrange the homework sheets in proper order.
- Staple the assignments in the upper left-hand corner making sure that no part of any problem identification or solutions is covered by the staple.
- Turn in assignments by the beginning of class on the indicated due date.

Attitude:

- The goal of performing the FRQ assignment is to arrive at a solution by a method that makes sense to YOU, not to invent a method which produces the correct answer. Evaluation of the assignment is to ensure that your method is in accordance with the theory and practice presented in class, and to provide appropriate guidance when it is not the case.
- Discussions, comparisons, and validations of methods between students or study groups are acceptable and often helpful. However, each individual's submission is expected to represent his or her own personal level of understanding of the particular topic. Copying or duplication of another's work and submitting it as your own or silently condoning such practice defeats the educational purpose of FRQ assignments and constitutes violation of academic integrity standards. Such violations will generally result in a zero on the suspect submission (for both the copier and the copied) and can (in extreme or repeated cases) result in failure of the course because of "zero" grades.

Deviation from the above requirements will make the submitted assignment unacceptable and it may be assigned a grade of zero. Unprofessional or unreadable homework will not be graded and may also receive a grade of zero. <u>No late FRQ assignments will be accepted</u>. Field trips or other pre-arranged absences will *not* be excuses for late FRQ's.

Ms. Seigle's AP Calculus Class period:

PRINT NAME	SI	GNATURE		DAT
cell: () - PHONE NUMBER(s)	work: ()	-	home: () -
EMAIL ADDRESS(es) to contact as no	eeded			
QUESTIONS/COMMENTS/	CONCERNS:	Check box if yo	ou wish to be contacted	d about what is written belo
t Acknowledgement Section	1:			
t Acknowledgement Section	:			
t Acknowledgement Section	:	SIGNATURE		
t Acknowledgement Section PRINT NAME DATE	l:	SIGNATURE	2	
t Acknowledgement Section PRINT NAME DATE EMAIL ADDRESS (optional)	ı:	SIGNATURE		
It Acknowledgement Section PRINT NAME DATE EMAIL ADDRESS (optional) QUESTIONS/COMMENTS/	CONCERNS:	SIGNATURE Check box if ye	ou wish to be contacte	d about what is written belo
at Acknowledgement Section PRINT NAME DATE EMAIL ADDRESS (optional) QUESTIONS/COMMENTS/	CONCERNS:	SIGNATURE Check box if ye	ou wish to be contacted	d about what is written belo
PRINT NAME DATE EMAIL ADDRESS (optional) QUESTIONS/COMMENTS/	CONCERNS:	SIGNATURE Check box if ye	ou wish to be contacte	d about what is written belo

LOCUST GROVE HIGH SCHOOL GRAPHING CALCULATOR AGREEMENT *** FOR <u>CLASSROOM USE ONLY</u> ***

Parents of Mathematics Students,

Successful mastery of the standards in <u>AP Calculus</u> requires the occasional-to-frequent use of a graphing calculator. Locust Grove High School will provide a TI-84 Plus and/or a TI-Nspire CX graphing calculator for your child to use in the course. Students are expected to use school calculators for their intended purpose. Students caught playing games on the calculators or drawing on the calculators will be dealt with as a discipline issue. If the graphing calculator is damaged by the student, you will be expected to pay for damages, including possible replacement of the calculator. Acceptable means through which to replace calculators include either purchasing a TI-84 Plus or TI-Nspire CX calculator (depending on which was damaged or lost) and bringing it in its original packaging to the math teacher, or paying \$150 (TI-84 Plus) or \$175 (TI-Nspire CX) to Locust Grove High School for replacement.

You may choose to buy a graphing calculator for your child, assuring that s/he will always have one to use at school or at home. If you select this option, specific recommendations may be made by contacting your child's math teacher. Though many personal, Wi-Fi enabled, handheld devices have graphing calculator apps, students may not be allowed to use such devices during class, and will not be allowed to use such devices during assessments; in fact, <u>only approved graphing calculators</u>, if any, will be allowed for use on assessments.

Please select one of the following options by initialing in the blank provided, and then signing in the appropriate space underneath your selection.

I understand the expectations pertaining to my child using one of LGHS's graphing calculators.

_____ I do not want my child to use a school graphing calculator. I will provide one for her or him to use in class.

Student Name (Please <i>print</i> legibly)	Student Signature	Date
Parent/Guardian (Please print legibly)	Parent/Guardian Signature	Date
DO NOT WRITE BI	ELOW UNTIL SO DIRECTED BY TEACHE	ER

Graphing Calculator Assigned for In-Class Use:

TI-84 PLUS #

TI-Nspire CS #_____

Student Signature: _____

Date: _____

LOCUST GROVE HIGH SCHOOL GRAPHING CALCULATOR AGREEMENT

Parents of Mathematics Students,

Successful mastery of all of the objectives in <u>AP Calculus</u> necessitates the frequent use of a calculator. Locust Grove High School is prepared to issue a <u>TI-Nspire graphing calculator</u> to your child for the duration of the course. The battery in this calculator is rechargeable using a USB connection. You will be required to replace an assigned calculator if it is **lost, damaged, or stolen**. Acceptable means through which to replace calculators require that you either purchase a TI-Nspire calculator and bringing it in its original packaging to the math teacher, or that you pay \$175 to Locust Grove High School.

Your child will not be issued a calculator if you do not wish to accept responsibility for replacing a lost, damaged, or stolen calculator. A calculator may be available for use during class or you may wish to purchase a graphing calculator for your child.

Please sign this form indicating your acceptance of responsibility for one TI-Nspire calculator for the 2016 - 2017 school term.

Student Name (Please *print* legibly)

Parent Signature

Date

To be completed by the student *at the time the calculator is issued*:

I have been issued TI-Nspire calculator # _____ with serial # _____

I have also been issued a USB Chord for charging, which must be returned:

(initial in box)

I understand that I must return **this** calculator in the same condition in which it was issued to me or I will be fined \$**175**. Return of any other Locust Grove High School calculator, though appreciated by the math department, will not change the fact that I am responsible for the one I was issued.

Student Signature

Date

Exam
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2

Cost: \$94 (or \$53 for Free-Reduced Lunch-eligible students)

... fee due around mid-April

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TUDEN	UDEN
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TUDE	B
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2	
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YES, I will definitely take the AP Calculus Exam	Initial here if vou are willing to
My financial situation is:	participate in fundraisers to help
My family will be able to cover the \$91 fee	cover exam fees:
My family will need some assistance to cover the \$91 fee, but I am not eligible for FRL	For my fee only
I am eligible for FRL and my family will be able to cover the \$53 reduced fee	
I am eligible for FRL but my family will still need some assistance to cover the \$53 reduced fee	For anyone in need
NO, I will not be taking the AP Calculus Exam (even though I know Ms. Seigle really, r	r, really wants <i>and <u>expects</u></i> me to)
My reasons are:	
Academic - I do not believe I will not "pass" by earning a 3, 4, or 5 on the exam	

UNDECIDED (aka, I just need Ms. Seigle to convince me I can do it)

NOTE: If financial, I can help you raise the money...I just need for you to let me know by checking one of the YES boxes above!

Financial - I would like to take the exam but my family cannot afford it

I do not have a good reason why, I just simply do not want to take it

Student		Parent
Signature:	Date:	Signature:

Questions/Comments for Ms. Seigle: