

**ELMIRA HIGH SCHOOL  
PRECALCULUS A/B**

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**PREP/OPEN** 2<sup>nd</sup> Period

**LANE COMMUNITY COLLEGE  
MATH 111 – COLLEGE ALGEBRA**

**LCC TERM** Winter 2019  
**LCC CRN** TBD: \_\_\_\_\_  
**LCC CREDITS** 5 credits  
**LCC IMPORTANT DATES**  
Registration Opens: December 4, 2018  
Last Day to Withdraw: March 1, 2019  
Grades Due to LCC: March 26, 2019

**Prerequisite**

Successful completion of Algebra 2 (Math 95 at LCC) with a C- or better or teacher approval

**Course Description**

This class provides the opportunity for high school and college credit through the state's *Sponsored Dual Credit Program* and the *Lane Regional Promise Grant*. Precalculus A is split into two parts with the first part meeting the requirements set forth by LCC for credit in Math 111 and the second part continuing with the high schools Precalculus curriculum. Precalculus B is not part of the dual credit opportunity and will only earn credit at the high school. This syllabus has information for both the LCC and EHS portions of the course.

**LCC Math 111 (1<sup>st</sup> Semester)**

College algebra is the study of basic functions and their applications. This includes polynomial, rational, exponential, and logarithmic functions and their inverses. Other topics include an introduction to sequences and nonlinear systems of equations. In accordance with national recommendations, this course emphasizes skill building, problem solving, modeling, reasoning, communication, connections with other disciplines, and the appropriate use of technology. Graphing Calculator is required. Please refer to the Calculator Recommendation Chart on [www.lanec.edu/math](http://www.lanec.edu/math). However, students will be held accountable for many skills without a calculator.

**EHS Precalculus (1<sup>st</sup> and 2<sup>nd</sup> Semester)**

This is a full-year course dedicated to a deepened study of functions, parametric and polar equations, and discrete mathematics. An in-depth study of functions will include modeling with numerical, graphical, and algebraic representations of linear, polynomial, power, rational, exponential, logistic, logarithmic, and trigonometric functions. The class rounds out with an introduction to combinatorics, sequences, series, statistics and probability, and limits.

In addition to the above mentioned content, we will also work to develop competency in reading and studying math writing and written examples, explore new real-world applications, effectively communicate ideas and solutions orally and in written form, and extend competency and mastery of effective calculator use, arithmetic, fractions, decimals, and algebraic thinking.

**Course Objectives**

**LCC Math 111**

In order to successfully complete the LCC Math 111 course, the student should have demonstrated the ability to:

1. Maintain, use, and expand the skills and concepts learned in previous mathematics courses.
2. Apply the midpoint formula, distance formula, properties of lines, and equations of circles to the solution of problems from coordinate geometry.
3. Use and apply the concepts, language, notation, and evaluation of functions, including input-output ideas, domain, range, increasing, decreasing, maximum values, minimum values, symmetry, odd, even, composition of functions, and inverses.
4. Use substitution to create an equation defining one quantity as a function of another.
5. Apply principles of transformations (shifts, reflections, and stretches) to equations and graphs of functions.
6. Recognize, sketch, and interpret the graphs of the basic functions without the use of a calculator:

$$f(x) = c, x, x^2, x^3, x^n, \sqrt{x}, |x|, e^x, a^x (a > 0), \log_a x (a > 1), \ln x, \frac{1}{x}, \frac{1}{x^2}.$$

7. Identify and apply properties of polynomial functions.
8. Identify and apply properties of rational functions with and without a calculator.
9. Identify and apply properties of exponential and logarithmic expressions and functions.
10. Analyze a function by interpreting its graph, using a graphing calculator.

11. Translate a set of numerical data into graphical form, choose a function (linear or exponential) to model the data, and interpret the implications of the model (optional – time permitting).
12. Translate word problems into mathematical expressions, solve the problems, and interpret the solutions.
13. Communicate ideas of college algebra through English statements and mathematical sentences.
14. Use the language and skills of Precalculus that are important for success in calculus.
15. Write and evaluate the notation of sequences and series including  $n$ th terms, summations, and factorials.
16. Solve nonlinear systems of equations algebraically and graphically (optional – time permitting).
17. Identify sequences as arithmetic, geometric, or neither and apply appropriate formulas related to those sequences to solve problems (optional - time permitting).
18. Accurately apply the mathematics learned in college algebra to topics from the student's world.

### **EHS Precalculus**

In order to successfully complete the Precalculus A and B courses, in addition to the above LCC Math 111 objectives, the student should have demonstrated the ability to:

1. Utilize radians and degrees to find arc lengths and solve problems involving angular velocity.
2. Define the six trigonometric functions using the lengths of the sides of a right triangle, the coordinate plane, and the unit circle.
3. Solve problems involving the trigonometric functions of real numbers and the properties of the sine and cosine as periodic functions.
4. Generate the graphs of trigonometric functions and explore various transformations of these graphs.
5. Relate the concept of inverse functions to trigonometric functions.
6. Apply trigonometry to solve real world problems
7. Use the fundamental identities to simplify trigonometric expressions, solve trigonometric equations, and prove further identities.
8. Understand the proof of the Law of Sines and the Law of Cosines and use the laws to solve a variety of problems, solve acute and obtuse triangles, and to determine the area of a triangle in terms of the measures of the sides and angles.
9. Use the multiplication principle of counting, permutations, combinations, or the binomial theorem to count the number of ways that a task can be done and find probabilities of events.
10. Identify a sample space and calculate probabilities and conditional probabilities in sample spaces with equally likely or unequally likely outcomes.
11. Use sigma notation and find finite sums of terms in arithmetic and geometric sequences and be able to find sums of convergent geometric series (optional - time permitting).
12. Use the principle of mathematical induction to prove mathematical generalizations (optional - time permitting).
13. Distinguish between categorical and quantitative variable and use various kinds of graphs to display data (optional - time permitting).
14. Use measures of center, the five-number summary, a boxplot, standard deviation, and normal distribution to describe quantitative data (optional - time permitting).

### **Student Expectations**

In a math class it is extremely hard to succeed if you are not in class regularly. Being “on time” for class means you are in the classroom, with the necessary materials, and ready to go. Anything less and you can be marked tardy.

- Be respectful of others and the learning environment.
- Be 100% present...be physically here, mentally focused, and fully engaged in fulfilling the purpose of the class.
- Be responsible.
  - Turn in due assignments, get missing assignments, and schedule make-up of missed tests.
  - Success in a math class requires engagement during lessons, adequate self-study, and diligence in preparation.
- My classroom will follow all building rules as detailed in the EHS Student Handbook. Here are a few notable rules:
  - No food or drink other than water is permitted during class.
  - Phones, music devices, headphones, game devices, etc. will not be allowed in class. Exceptions may occur with instructor approval for music and headphones during appropriate times and only with permission. On the occasion a music device is allowed to be used, it must stay at a volume low enough that nobody else can hear it.
  - Students will not be able to use their phones, tablets, or music devices as calculators. This will be especially enforced during tests.
  - There will be no sharing of calculators during tests.

## High School Standards

The following standards are addressed in this course: a.sse.1-4, a.apr.1-3, a.apr.6-7, a.ced.1-4, a.rei.1-4, a.rei.10-12, g.c.5, g.mg.3, g.srt.6-11, f.if.1-9, f.le.1-5, f.bf.1-5, f.tf.1-9, n.vm.1-5, n.q.1, n.cn.1-3, n.cn.7-9, n.rm.1-3, s.id.1-9, s.cp, s.md

## Required Materials

These materials should be with you in class every day:

- **Textbook:** Precalculus, Demana, Waites, Foley & Kennedy, 2011
- **Graphing calculator.** TI-83/TI-84 or comparable calculator is required for this class. See me if you are intending to use a calculator other than a TI-83 or TI-84 to make sure it meets the requirements of the course.
- Planner
- Paper/notebook for class notes and assignments
- Writing utensils (pens and pencils)
- Binder or folder for organizing returned assignments, quizzes, tests, activities, and handouts.

## Late Homework and Make-up Tests

- Homework is due on the day after it is assigned.
- Late homework must be turned in no later than the following Monday to receive credit.
- Students will only have as many days as they were absent to turn in the assignment for full credit.
- If a student misses a test on the first day of an absence or string of absences, the student will be expected to make up that test on the day they return.

## Test Retakes

The policy for retaking tests and quizzes will be different for the LCC grade and the high school grade.

### LCC Math 111

There will be no retakes of tests and quizzes that qualify for the LCC Math 111 credit. It is important to stay up to speed with the course and fully prepare for tests and quizzes ahead of time.

### Precalculus

Students will have the opportunity to retake most tests. Quizzes and take-home quizzes will not have retakes available. In order to do so, the student will need to meet certain criteria. The goal is for students to improve their understanding and demonstrate that improvement before retaking the test.

- The student must fully and accurately fill out a *Test Retake Contract* and have it approved by Mr. Best.
- The contract will outline the conditions the student must meet, including providing evidence that the student has worked to improve mastery of the concepts, before a retake will be issued.

## Extra Credit

Extra credit will generally not be offered in this course.

## Extra Help

Students are encouraged to come in for extra help when needed. Availability times include before and after school, during lunch, and during my prep period. These times are not guaranteed. Due to other duties there will be times when I am not available for help sessions. It is recommended that students check in with me if they plan to come in for help. Students are also encouraged to utilize the Learning Center and Homework Club.

## Grade Scale

The standard grading scale used at the school will be used, with scores at the top and bottom 3% of each grade range earning plus and minus notations.

A 90.00 – 100%      B 80.00 – 89.99      C 70.00 – 79.99      D 60.00 – 69.99      F <60%

## Evaluation / Performance Expectations

All of the following categories will combine to form the overall transcript grade. An academic grade will also be provided that does not include the homework grade.

### Homework

Homework will be graded on completion, quality, and timeliness. On the day after an assignment is assigned, students will have the opportunity to get feedback on their work and be able to ask questions. I will often use this discussion time to reteach concepts or expand on the information from the day before. Homework should be considered due the day after it is assigned and is thereafter considered late. Late homework is only accepted for credit until the following Monday. For homework turned in late due to absence, it is the student's responsibility to communicate on the assignment why it's late if they want it excused.

### Tests and Quizzes

Quizzes and take-home quizzes are based on the homework and reading that focus on a small number of concepts. Tests (midterms) will cover everything in the unit up to that point. These will be graded on accuracy and will be designed to measure the students' knowledge and application of the concepts. Tests will often be split into two, one part that allows calculators to be used and one that doesn't. See the retake policy mentioned above.

### Final Exam

Taking the final exam is required to pass the class. The final is a comprehensive assessment of concepts. There will be a final for the LCC Math 111 course, and a separate final for the EHS Precalculus course.

	LCC	EHS
Homework, Classwork, Take-Home Quizzes (LCC)	20%	20%
Tests, Take-Home Quizzes (EHS)	55%	65%
Final Exam	25%	15%

## Safety

In the case of a fire drill, we will follow the route that is posted in the classroom. Our class will exit out the door together, in a calm manner, and head right towards the **back** of the parking lot. During a fire drill, students will quickly exit in an orderly fashion and will convene as a class in one spot in the parking lot.

**This syllabus is to be kept in the student's notebook.**

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The Fern Ridge Board of Education and Fern Ridge School District Policy deem there will be no discrimination or harassment on the grounds of race, color, sex, marital status, religion, national origin, age, or disability in educational programs, activities or employment. Person(s) having questions about equal opportunity, discrimination or harassment should contact the Superintendent at the Fern Ridge School District, 88834 Territorial Road, Elmira, OR 97437, Phone (541) 935-2253.