

|  |  |
| --- | --- |
| **Ms. Amanda Dowd** | **Phone: (503)673-7800** |
| **Pre-Calculus , 2019/2020 (full year)**  **Math 111/112**  **HS 1 Credit**  **Math 111/112, 5 CR each (10 total for upon completion of year-long course)** | **E-mail:** [**dowda@wlwv.k12.or.us**](mailto:dowda@wlwv.k12.or.us) |
| **Room: B105**  Office Hours: 8:00-8:20am, Lunchtime, 3:10-3:30 | **http://www.wlhs.wlwv.k12.or.us/Page/8537**  **ACC Website: www.clackamas.edu/acc** |
| ACC Prerequisites: **MTH-095 with a C or better, or placement in MTH-111**  **Textbook:** Precalculus: Mathematics for Calculus. James Stewart. 5th edition. |  |
|  |  |
|  |  |

**WLHS Course Description:** This course is the analysis of polynomial, rational, power, exponential, logarithmic, trigonometric, and piecewise functions and their general characteristics. In addition, logic, probability, statistics, matrices, transformations, composition, inverses, and the binomial theorem will be covered. Students will be exposed to some beginning calculus topics. Applications are emphasized throughout the material and algebraic, graphical, numerical, and verbal methods will be used to analyze and interpret problems.

**ACC Course Description**: A transfer course designed for students preparing for trigonometry, statistics, or calculus. The focus is on the analysis of piecewise, polynomial, rational, exponential, logarithmic, power functions and their properties. These functions will be explored symbolically, numerically and graphically in real life applications and mathematical results will be analyzed and interpreted in the given context. The course will also include transformations, symmetry, composition, inverse functions, regression, the binomial theorem and an introduction to sequences and series

**Major Units:**

|  |  |
| --- | --- |
| Chapter 1 Algebraic Fundamentals  Chapter 2 Transformations of Functions  Chapter 3 Polynomial and Rational Functions  Chapter 4 Exponential and Logarithmic  Functions  Chapter 5 Trigonometric Functions of Real  Numbers  Chapter 6 Trig Functions of Angles | Chapter 7 Analytic Trigonometry  Chapter 8 Polar Coordinates and Vectors  Chapter 9 Systems of Equations and  Inequalities  Chapter 10 Analytic Geometry  Chapter 11 Sequences and Series  Chapter 12 Limits and Derivatives |

**Learning Objectives:** Using a graphing calculator to investigate and solve problems, by engaging students in critical thinking tasks. Students will be required to communicate mathematical ideas verbally, graphically, algebraically, and numerically. Describe general properties of functions as they relate to calculus, using the concept of limit as it pertains to sequences and functions, analyzing the graphs of polynomial, rational, radical, and transcendental functions, using the Pythagorean Theorem to develop and understand both circular and right triangle trigonometry.

**Learning Goals:**

* Find and interpret average rate of change and communicate how it applies to a relative application
* Find and interpret the difference quotient and explore its application in real life
* Find and interpret properties of piecewise-defined, polynomial, rational, power, radical, exponential and logarithmic functions
* Evaluate and graph piecewise-defined, polynomial, rational, power, radical, exponential and logarithmic functions
* Solve equations involving piecewise-defined, polynomial, rational, power, radical, exponential and logarithmic functions
* Apply the solving of piecewise-defined, polynomial, rational, power, radical, exponential and logarithmic functions within real life applications and effectively communicate the results in the proper context
* Analyze and communicate differences in behaviors of different types of functions both graphically and numerically
* Data will be modeled using the appropriate regression ad the model will be used to answer real-life questions and make predictions
* Apply transformations to functions
* Factor polynomial functions from a graphical perspective and write equations of polynomials given a graph
* Find and interpret composition of functions and use the composition function to answer questions pertaining to a real-life application
* Find and interpret inverse functions
* Utilize proper notation to define and evaluate sequences and series
* Solve applications involving sequences and series
* Apply Pascal’s Triangle and the Binomial Theorem
* Define and identify trigonometric functions
* Convert between radian measure and degrees
* Use radian measure to compute the length of an arc
* Find trigonometric values for particular angles in a right triangle
* Evaluate the sine and cosine functions for particular angles on the unit circle from memory
* Define sine and cosine functions based on the unit circle
* Graph, transform, and analyze the graphs of sine and cosine functions
* Rewrite tangent, secant, cosecant, and cotangent functions in terms of sine and cosine functions
* Use the trigonometric identities and inverse trigonometric functions appropriately to solve mathematical problems
* Verify trigonometric identities
* Use the laws of sine and cosine to solve mathematical problems
* Recognize, model, and solve applications using trigonometry
* Perform vector arithmetic
* Use vectors to model applications and solve mathematical problems
* Use parametric equations to describe curves
* Convert between Cartesian and polar coordinates
* Use polar equations to describe curves
* Recognize, and solve mathematical problems with polar equations
* Graph and translate graphs of conic sections (parabolas, ellipses, hyperbolas, and circles)
* Demonstrate an appropriate use of technology to solve problems

**Standards of Mathematical Practice:**

The student will:

* Make sense of problems and persevere in solving them
* Reason abstractly and quantitatively
* Construct viable arguments and critique the reasoning of others
* Model with mathematics
* Use appropriate tools strategically
* Attend to precision
* Look for and make sense of structure
* Look for and express regularity in repeated reasoning.

*All math courses are designed to meet the requirements of the WLWV Mathematics Curriculum and the Common Core State Standards.*

**Grading: Grading Breakdown:**

## A: 90 and above Tests 50%

## B: 80.0-89.9 \*Quizzes 15%

C: 70.0-79.9 Final Exam 20%

D: 60.0-69.9 ~Homework 15%

F: 59.9 and below

~College grades should be checked at the end of each semester through the student MyClackamas account information and then clicking of grades or unofficial transcript – <https://my.clackamas.edu/>

**\*Quiz Policy: Quizzes will be taken the day that they are scheduled, regardless of prior absences. If you miss a quiz on the scheduled day, you may not make it up and it will be given a “no grade” in the grade book. Students who take the quiz on the scheduled day have the option to replace their quiz score with their test score in the same unit if their score is better on the test than on the quiz.**

**~ Late homework will be accepted on or before the chapter test day for 80% credit at most and will not be accepted after the chapter test for the unit has been given.**

**Supplies:** Students must come to class each day with the following items:

* Graphing calculator
* Pencils
* Notebook paper or Spiral Graphing notebook
* Binder
* Pens and highlighters
* Textbook

**Homework:** Homework is assigned on a daily basis and will be corrected the next class period. In order to be successful, it is critical to practice new ideas and concepts. *Homework is graded on a scale of 1 to 5 and will be graded on completion, effort, and demonstration of techniques rather than correctness*. Problems must show full work in order to earn full credit. If an excused absence occurs, students have *one day per missed class* to turn in assignments.

**Policies:** In order to have a successful and safe learning environment the following policies will be enforced:

* Act with kindness
  + Be respectful to each other, the teacher and to the things in the room. This includes putting cell phones away when entering the room and not taking them out until teacher allows.
  + Do not write or doodle on desks.
* Work together
  + This course emphasizes collaboration: class discussions, group work, and pair-sharing. There is a lot to be learned from your peers and having the opportunities to articulate, challenge, and defend ideas will strengthen every individuals mathematical understanding. We are all in this together, so let’s work together.
* Electronic Devices
  + Cell phones will be stored at the front of the room and are used to take attendance. Phones may only be used upon teacher approval.

*Because this class is a dual credit class, earning high school and college credit, you are held to student conduct policies for the high school and Clackamas Community College. Please refer to the HS Student Handbook and the College ACC and Student Handbooks at* [*www.clackamas.edu/acc*](http://www.clackamas.edu/acc) *and then open Student Resources for direct links to these handbooks.*

**Attendance**: Regular attendance is necessary for successful completion of the course for WLHS and ACC dual credit.

**Website:** If you miss class, please check the website calendar to see what you have missed. You should always check the class webpage before emailing the teacher to see what you missed.

**Additional Support:** Further academic support is offered through the academic center located in the ERC, above the counseling office, appointments are not needed. If at any point you wish to get a private tutor your guidance counselor can provide you with a district approved list.

CC Learning Center Access – If registered for the college credit, you have access to free tutoring and supports.

[www.clackamas.edu/LearningCenter/](http://www.clackamas.edu/LearningCenter/)