

Cornwall-Lebanon School District Curriculum Overview

Honors Calculus – High School

length of time in weeks	Concepts & Competencies	Common Assessments	Academic Standards (PA Core if applicable)
Unit 1 1	<p style="text-align: center;"><u>Pre-Requisites</u></p> <p>Students will graph piecewise functions. Students will evaluate functions graphically and algebraically. Students will factor and solve quadratic functions. Students will simplify and solve equations involving rational exponents. Students will use the difference quotient.</p>	<ul style="list-style-type: none"> ➤ Review Packet 	
Unit 2 4	<p style="text-align: center;"><u>Limits and Discontinuity</u></p> <p>Students will evaluate limits graphically and algebraically. Students will determine the continuous nature of functions and write functions that change discontinuous functions into continuous ones. Students will evaluate limits at points of discontinuity and when approaching infinity.</p>	<ul style="list-style-type: none"> ➤ Quiz: Limits ➤ Quiz: Continuity ➤ Test: Limits and Continuity Exam 	EU 1.1 EU 1.2
Unit 3 9	<p style="text-align: center;"><u>Differentiation</u></p> <p>Students will use the limit definition to find the derivative. Students will calculate derivatives and higher order derivatives. Students will write equations of tangent and normal lines. Students will determine velocity, acceleration, and other rates of change. Students will determine the derivative of implicit functions and solve problems involving rates of change.</p>	<ul style="list-style-type: none"> ➤ Quiz: Derivative Definition ➤ Quiz: Derivative Shortcut Rules ➤ Test: Marking Period Exam ➤ Quiz: Chain Rule and Trig Derivatives ➤ Quiz: Implicit Differentiation ➤ Quiz: Related Rates ➤ Test: Derivatives 	EU 2.1 EU 2.3
Unit 4 7	<p style="text-align: center;"><u>Derivative Applications</u></p> <p>Students will use the derivative to analyze properties of a function. Students will apply the mean value theorem to describe the behavior of a function. Students will solve problems involving optimization.</p>	<ul style="list-style-type: none"> ➤ Quiz: Minima and Maxima ➤ Quiz: Using the Derivative to Graph ➤ Optimization Quiz ➤ Optimization Project ➤ Test: Curve Sketching Exam 	EU 2.2 EU 2.4

<p>Unit 5</p> <p>6</p>	<p style="text-align: center;"><u>Integration</u></p> <p>Students will determine the anti-derivative of a function and use the anti-derivative to write the initial function. Students will use the fundamental theorem of calculus to evaluate definite integrals. Students will use u-substitution and integration by parts to evaluate the anti-derivative of functions. Students will use the rectangular approximation method and integration to find the area under a curve.</p>	<ul style="list-style-type: none"> ➤ Quiz: Antiderivatives ➤ Quiz: Basic Integration ➤ Quiz: U-Substitution ➤ Quiz: Integration by Parts ➤ Test: Marking Period Exam 	<p>EU 3.1</p> <p>EU 3.2</p> <p>EU 3.3</p> <p>EU 3.4</p> <p>EU 3.5</p>
<p>Unit 6</p> <p>7</p>	<p style="text-align: center;"><u>Applications of Integration</u></p> <p>Students will use integrals to calculate the area between two curves. Students will find the volume of a solid formed by revolving an area a solid around an axis. Students will determine the arc length and surface are of a function. Students will use integration to determine the work done by a variable force.</p>	<ul style="list-style-type: none"> ➤ Quiz: Area Between Two Curves ➤ Quiz: Volume using Disk/Washer Method ➤ Quiz: Any Axis of Revolution ➤ Quiz: Arc Length and Surface Area ➤ Quiz: Work – Force ➤ Test: Unit 6 Exam 	<p>EU 5.1</p> <p>EU 5.2</p> <p>EU 5.3</p>