

NOUVEL CATHOLIC CENTRAL HIGH SCHOOL

TRIGONOMETRY

COURSE SYLLABUS 2017-18

COURSE DESCRIPTION:	<p>This objective of Trigonometry is to give the student an understanding of representations and uses of trigonometric functions. This will prepare a student to use trigonometric functions in real world settings and the ability to work with trigonometric functions in Pre-Calculus and higher-level math classes. A student will study both triangle-related and circle-related trigonometry concepts.</p> <p>Grades offered: 12</p> <p>Prerequisites: Algebra, Geometry and Algebra 2</p>
MAJOR COURSE GOALS:	<ol style="list-style-type: none">1. The learner will define trigonometric ratios and solve problems involving right triangles. HSG.SRT.B.52. The learner will understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles. HSG.SRT.C.63. The learner will explain and use the relationship between the sine and cosine of complementary angles. HSG.SRT.C.74. The learner will use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. HSG.SRT.C.85. The learner will understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces). HSG.SRT.D.116. The learner will understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle. HSF.TF.A.17. The learner will explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle. HSF.TF.A.28. The learner will use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosine, and tangent for x, $\pi + x$, and $2\pi - x$ in terms of their values for x, where x is any real number. HSF.TF.A.39. The learner will use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions. HSF.TF.A.410. The learner will choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline. HSF.TF.B.511. The learner will understand that restricting a trigonometric function to a

	<p>domain on which it is always increasing or always decreasing allows its inverse to be constructed. HSF.TF.B.6</p> <p>12. The learner will use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context. HSF.TF.B.7</p> <p>13. The learner will prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle. HSF.TF.C.8</p> <p>14. The learner will use the addition and subtraction formulas for sine, cosine, and tangent to solve problems. HSF.TF.C.9</p> <p>15. The learner will derive the formula $A = 1/2 ab \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side. HSG.SRT.D.9</p>
COURSE ASSESSMENT PLAN:	<p>In-class informal assessment of understanding will occur every day within the context of the instructional time. The purpose of these assessments is to determine each student's current level of mastery of major concepts.</p> <p>Each unit will include one or two written tests and may include one or two quizzes. After all assessments, the class will go through an in-depth analysis of errors and students will be expected to retest on content that is not yet mastered. Tests and quizzes will assess the major topics included in the unit and will include authentic applications of the concepts, where appropriate.</p> <p>Marking period grades will be determined in the following way: 45% from tests and quizzes, 15% from in-class work, 20% from homework and 20% from projects/partner work.</p>
SUPPLIES AND MATERIALS NEEDED:	<p>The student is expected to have the following supplies in class every day:</p> <ul style="list-style-type: none"> ○ Paper ○ Pencil or pen (Pencils are preferred but not required.) ○ Textbook ○ Calculator that has sine, cosine and tangent functions (Graphing calculators are not necessary for this course, but may be used to demonstrate some concepts) ○ 3 ring binder to store all handouts that are 3 hole punched (This binder does not have to be dedicated solely for Trigonometry class.)
EXTRA HELP:	<p>A student who needs help outside of class time should talk to the teacher as soon as possible to schedule a meeting either before or after school. Because of the teacher's job obligations at NCCE, meetings outside of class time must be scheduled in advance.</p> <p>If a student needs extra help outside of the time when the teacher is available, the student can get help from any other math teacher or work with the teacher to arrange tutoring.</p>
INSTRUCTIONAL PHILOSOPHY:	<p>This class will include a combination of individual, group and partner work, with the intent to challenge each student at the appropriate level. Class time will</p>

	include whole class and small group lecture, individual and partner practice time and some class discussion. Some students may test out of certain sections of the course content, allowing independent work in the extra time. Any independent work will be designed and agreed upon by the student and the teacher.
MAJOR COURSE PROJECTS AND INSTRUCTIONAL ACTIVITIES:	<p>Instructional activities:</p> <p>During class time, a student will participate in discussions with small groups or the whole class, solve problems individually or with a partner and work on learning activities individually or with a partner. Outside of class, a student will do homework assignments and complete project work that is not done during class time.</p> <p>Major projects will include:</p> <ul style="list-style-type: none"> ○ Astrolabe project, which will allow the students to learn how to find the height of an object using a student-made astrolabe and trigonometric functions. ○ Plotting trigonometric functions project that will connect the 30°-60°-90° and 45°-45°-90° triangle patterns and the exact values of sine, cosine, and tangent for 0°, 30°, 45°, 60°, and their integer multiples found on the unit circle to the graphs of the sine, cosine, tangent, secant, cosecant and cotangent functions.
CLASSROOM EXPECTATIONS:	<p>The student is expected to:</p> <ul style="list-style-type: none"> ○ Be prepared with all supplies and a focused attitude when the bell rings. ○ Contribute positively to the learning environment in the classroom. ○ Ask questions and seek out help when confused. ○ Show respect toward self, fellow students, teachers, administrators and others by your words and actions. ○ Respect all personal and school property. ○ Set high expectations for your own performance and help others to achieve their high expectations. ○ Be in compliance with the dress code at all times.
HOMEWORK POLICY AND GRADING SCALE:	<p>Homework will be assigned multiple days a week and will be checked for completion at the beginning of class that it is due. After the class goes over the assignment, it will be collected for credit. No points are earned if the homework is never turned in for credit. Homework assignments are worth up to 5 points, depending on level of completion of the assignment. Late homework will be accepted, unless otherwise specified when the assignment is given, and as long as it is done outside of class time. Some homework may be project based.</p> <p>Course grades will include marking period grades and the semester exam, using the percentages listed in the Student Handbook.</p>
CONTACT INFORMATION:	
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