



Course Outline: **ADVANCED ALGEBRA WITH TRIGONOMETRY & STATISTICS (MATH-4)**
School Year : **2013 – 2014**

FIRST QUARTER		
<i>Peace Integration Theme: Harmony with Self (Personal Peace)</i>		
TIME FRAME	CONTENT	REFERENCES
	FUNCTIONS	
Week 1	a.) Definitions	TB, page 25- 28
	b.) Difference between Relations and Functions based on real life relationships, set of ordered pairs, and graph of a given set of ordered pairs	TB, page 25- 33
	c.) Determine the value of the function	TB, pages 37
	d.) Domain of the function	TB, pages 28- 33
	LINEAR FUNCTIONS	
Week 2	a.) Definition	TB, page 58
	b.) General and slope-intercept($y=mx+b$) forms	TB, pages 59- 62
	c.) Graphing linear function in different ways (e.g. intercepts)	
	d.) Determine the x and y intercepts given a linear function	
	e.) Slope-intercept form and point-slope form	
	f.) Parallel and perpendicular lines	OR #3 pages 120-127
	g.) Equations and slope of the line	OR #3 pages 132-137
	h.) Applications on linear function	
	QUADRATIC FUNCTIONS	
Week 3	a.) Definition	TB, page 67
	b.) Factoring and completing the square	OR #8 pages 26- 64
	c.) General and standard[$y=a(x-h)^2+k$] forms	
Week 4	d.) Graphing quadratic function	TB, pages 68- 77
	e.) Axis of symmetry, vertex, and opening of the graph	
	f.) Zeros/Roots of a quadratic function	
	POLYNOMIAL FUNCTIONS	
Week 5	a.) Definition of Polynomial Function	TB, pages 86- 87
	b.) Evaluating Polynomial Function	TB, pages 90- 91
	c.) Long, Synthetic, and Extended Synthetic Division	TB, pages 93- 97
Week 6	d.) The Remainder Theorem	TB, pages 103- 105
	e.) The Factor Theorem	TB, pages 108- 110
Week 7	f.) Finding the Rational Zeros * The Rational Zero/Root Theorem	TB, pages 113- 117
	g.) End Behavior, Zeros and Their Multiplicities	TB, pages 120- 124
	h.) Graphs of Polynomial Function	TB, pages 127- 131
PROJECT	Functions of the World	

SECOND QUARTER		
Peace Integration Theme: Harmony with Creation		
TIME FRAME	CONTENT	REFERENCES
	EXPONENTIAL AND LOGARITHMIC FUNCTIONS	
Week 1	a.) <i>Definition of Exponential and Logarithmic Functions</i>	<i>TB, pages 137- 140</i>
Week 2	b.) <i>Graphing Exponential Function (e.g. finding the asymptote)</i>	<i>TB, pages 143- 150</i>
	c.) <i>The Natural base e</i>	<i>TB, pages 153- 155</i>
Week 3	d.) <i>Graphing Logarithmic Function</i>	<i>TB, pages 157- 162</i>
	e.) <i>Laws of Logarithm</i>	<i>TB, pages 166- 170</i>
Week 4	f.) <i>Common Logarithm</i>	<i>TB, pages 174- 178</i>
	g.) <i>Natural Logarithm</i>	<i>OR #6 pages 387-392</i>
Week 5	h.) <i>Exponential and Logarithmic Equations</i>	<i>TB, pages 187- 192</i>
	i.) <i>Applications on Exponential and Logarithmic Functions</i> * <i>Compound Interest</i> * <i>Growth Problems</i> * <i>Decay Problems</i>	<i>OR #6, pages 374-377 TB, pages 195-202 and pages 205-211</i>
	CIRCULAR FUNCTIONS	
Week 6	a.) <i>Relationship between Degrees and Radians</i>	<i>OR #6, pages 440-442</i>
	b.) <i>Co-terminal angles and Standard Position</i>	<i>OR #6, pages 442-443</i>
Week 7	c.) <i>Arc Length and Area of a Sector</i>	<i>OR #6, pages 443-444</i>
	d.) <i>Unit Circle</i>	<i>OR #6, pages 502-509</i>
	e.) <i>Definition and Graphs of Sine and Cosine Functions</i>	<i>OR #6, pages 521-531</i>
Week 8	f.) <i>Definition and Graphs of Tangent and Cotangent Functions</i>	<i>OR #6, pages 535-542</i>
	g.) <i>Definition and Graphs of Secant and Cosecant Functions</i>	
Project	Career Investigations Project	

THIRD QUARTER		
<i>Peace Integration Theme: Harmony with Others</i>		
TIME FRAME	CONTENT	REFERENCES
	TRIGONOMETRIC FUNCTIONS	
Week 1	a.) <i>Special Angles and Solving Right Triangles</i> b.) <i>Angles of elevation and depression</i> c.) <i>Trigonometric Ratios</i>	OR #6, pages 449-457
Week 2	d.) <i>Signs of Trigonometric Functions</i>	OR #6, pages 514-518
	e.) <i>Finding the values of the six trigonometric functions</i>	OR #6, pages 510-513
Week 3	f.) <i>The Law of Sines</i>	TB, pages 356- 360
Week 4	g.) <i>The Law of Cosines</i>	TB, pages 363- 365
	STATISTICS	
Week 5	a.) <i>Definition of Statistics</i>	TB, page 387
	b.) <i>Difference between Sample and Population</i>	TB, page 388
	c.) <i>Summation/Sigma Notation</i>	OR #6, pages 877-885
Week 6	d.) <i>Methods of Data Collection</i> * <i>Predictions</i>	OR #1, pages 394 - 406
Week 7	e.) <i>Measures of Central Tendency</i> * <i>Ungrouped data (Mean, Mode, Median)</i> * <i>Grouped data (e.g. Mode)</i>	OR #1, pages 418 - 430 and TB, pages 418- 428
PROJECT	<i>Mathematics Meets Photography</i>	

FOURTH QUARTER		
<i>Peace Integration Theme: Living Harmoniously</i>		
TIME FRAME	CONTENT	REFERENCES
Week 1	f.) <i>Other Measures of Position (Quartiles, Deciles, Percentiles)</i>	TB, pages 431 -436
	g.) <i>Measures of Variation and Dispersion</i>	TB, pages 439 -450
	ANALYTIC TRIGONOMETRY	
Week 2	a.) <i>Fundamental Trigonometric Identities</i>	OR #6, pages 573-578
	b.) <i>Verifying or Proving Trigonometric Identities</i>	
Week 3	c.) <i>Addition and Subtraction Formulas</i>	OR #6, pages 579-583
Week 4	d.) <i>Double and Half Angle Formulas</i>	OR #6, pages 588-593
Week 5	e.) <i>Solving Trigonometric Equations</i>	OR #6, pages 598-608
	COUNTING TECHNIQUES AND PROBABILITY	
Week 6	a.) <i>Permutation, Combination, and Probability</i>	TB, pages 458- 481
PROJECT	<i>Survey Says</i>	

Textbook(TB):

E- Math: Advance Algebra and Trigonometry by Orlando A. Oronce and Marilyn O. Mendoza

Other References(OR):

1. Cañete, C. A. et al. (2007). Essential Mathematics ELEMENTARY ALGEBRA. Quezon City: Phoenix Publishing House, Inc.
2. Bautista, E.P. et al. (2006). XP INTRODUCTORY ALGEBRA. Quezon City. Vibal Publishing House, Inc,
3. Orines, F. and Manalo. Next Century Mathematics ADVANCE ALGEBRA, TRIGONOMETRY and STATISTICS. Quezon City: Phoenix Publishing House, Inc.
4. Chua, S.L. et al. (2004). UNDERSTANDING ELEMENTARY ALGEBRA. Quezon City: SIBS Publishing House, Inc.
5. Bluman, Allan G. (4th Edition) ELEMENTARY STATISTICS. McGRAW-Hill International EDITION 2008
6. Stewart, S. et al. (2012). STEWART'S ALGEBRA and TRIGONOMETRY. Cengage Pasig City. Learning Asia Pte. Ltd.
7. Nivera, G. (2011). INTERMEDIATE ALGEBRA. Makati City. Salesiana Books by Don Bosco Press Inc.

Websites(WS):

- 1.) <http://www.math.utah.edu/~pa/math/polya.html>
- 2.) <http://philosophy.hku.hk/think/strategy/problem-solving.php>
- 3.) <http://library.thinkquest.org/25459/learning/problem/>
- 4.) <http://www.khanacademy.org/>
- 5.) <http://www.balucamath.tripod.com>
- 6.) <http://regentsprep.org/Regents/math/ALGEBRA/AE8/LSolvIn.htm>
- 7.) http://www.ehow.com/how_4488224_solve-linear-inequalities.html
- 8.) http://www.wtamu.edu/academic/anns/mps/math/mathlab/col_algebra/col_alg_tut7_factor.htm
- 9.) http://people.sunyulster.edu/NicholsM/WebCT/FACTORING/factoring_techniques.htm
- 10.) <http://library.thinkquest.org/25459/learning/problem/psback.html>
- 11.) <http://library.thinkquest.org/25459/learning/problem/psguess.html>
- 12.) <http://pred.boun.edu.tr/ps/ps3.html>
- 13.) <http://www.teachervision.fen.com/math/problem-solving/48932.html>
- 14.) <http://www.une.edu.au/bcss/psychology/john-malouff/problem-solving.php#simplify>
- 15.) <http://library.thinkquest.org/25459/learning/problem/pssimpler.html>
- 16.) <http://www.nyu.edu/pages/mathmol/textbook/scinot.html>

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