



**TRIGBIO** – *Trigonometry for Biology Majors*  
 Prerequisite: MATH111

Prerequisite to:

**Instructor:**  
**Consultation Hours:**

**Contact details:**  
**Class Schedule and Room:**

**Course Description**

A course covering concepts and operations on functions and relations, with emphasis on polynomial functions, exponential and logarithmic functions, trigonometric functions and solutions of right triangles.

Learning Outcomes	
On completion of this course, the student is expected to present the following learning outcomes in line with the Expected Lasallian Graduate Attributes (ELGA)	
ELGA	Learning Outcome
Critical and Creative Thinker Effective Communicator Lifelong Learner Service-Driven Citizen	On the completion of the course, the student is expected to be able to apply appropriate trigonometric concepts, thinking processes and tools in the solution to various conceptual or real-world problems.

Final Course Output		
As evidence of attaining the above learning outcomes, the student is required to submit the following during the indicated dates of the term.		
Learning Outcome	Required Output	Due Date
On the completion of the course, the student is expected to be able to apply appropriate trigonometric concepts, thinking processes and tools in the solution to various conceptual or real-world problems.	Submit a paper discussing an application of the topics learned in the course that is related to your degree.  The output is type-written on at least three pages of letter paper using the font Arial, 11pt, double space and 1" margin all round.  The topic of the paper is subject to the approval of the faculty handling the course. As much as possible, there should be no duplication of topics.  The bibliography should involve two journal articles, two books or one of each.	Week 13

Rubric for assessment				
CRITERIA	Excellent (4)	Good (3)	Satisfactory (2)	Needs Improvement (1)
<b>Content and Organization (50%)</b>	In depth and insightful discussion  Logical sequencing of information throughout  Sufficient supporting details  Clear and effective concluding paragraph	Logical sequencing of information throughout  Sufficient supporting details  Clear and effective concluding paragraph	Logical sequencing of information most of the time  Details are given but inadequate to support the topic  Clear concluding paragraph but lacks effectiveness	Information presented with little organization  Most of the details are irrelevant  Concluding paragraph not clear
<b>Grammar (30%)</b>		No error	Between one and three errors	More than four errors
<b>Bibliography (20%)</b>		All resources cited	Some of the resources not cited	Majority of the resources not cited

### Additional Requirements

Aside from the learning output, the student will be assessed at other times during the term by the following: Quizzes, Seatwork, Homework, Board work and Recitation.

### Grading System

	FOR EXEMPTED STUDENTS (w/out Final Exam)	FOR STUDENTS with FINAL EXAM		Scale:	
		with no missed quiz	with one missed quiz		
Average of quizzes	95%	65%	55%	95-100%	4.0
Seatworks, Homework, Learning output	5%	5%	5%	89-94%	3.5
Final exam		30%	40%	83-88%	3.0
				78-82%	2.5
				72-77%	2.0
				66-71%	1.5
				60-65%	1.0
				<60%	0.0

### Learning Plan

LEARNING OUTCOME	TOPIC	WEEK NO.	LEARNING ACTIVITIES
On the completion of the course, the student is expected to be able to apply appropriate trigonometric concepts, thinking processes and tools in the solution to various conceptual or real-world problems.	<b>I FUNCTIONS AND THEIR GRAPHS</b> Functions Function Notation, Operations on Functions, and Types of Functions - Sum, Difference, Product, Quotient, Composite - odd function/even function Inverse Functions Symmetry of a Graph	Week 1-3	Seatwork Boardwork Lecture and Discussion Practice Exercises
	<b>II POLYNOMIAL FUNCTIONS</b> Linear Function - Equations of a Line and its Applications - Quadratic Functions and its Applications (Maximum and Minimum Values)	Week 4-5	
	<b>III EXPONENTIAL AND LOGARITHMIC FUNCTIONS</b> Exponents and the Number $e$ Exponential and Logarithmic Functions and their Properties Exponential and Logarithmic Equations Exponential and Logarithmic Models: (exponential growth and decay; population growth, bacterial growth, radioactive decay, compound interest, continuous compounding, logistic growth, learning curve)	Week 5-8	
	<b>IV TRIGONOMETRY</b> Angles and Their Measurement Trigonometric Functions of Angles Trigonometric Function Values The Sine and Cosine of Real Numbers Graph of the Sine and Cosine And their variations	Week 8-10	

	The Tangent, Cotangent, Secant, and Cosecant of Real Numbers  <b>V ANALYTIC TRIGONOMETRY</b> The Eight Fundamental Identities Proving Trigonometric Identities Sum and Difference Identities Double-measure and Half- measure Identities Solving Trigonometric Equations Solutions of Right Triangles -Angle of Elevation/Depression  <b>FINAL EXAM</b>	Week 10-13     Week 14	Seatwork Boardwork Lecture and Discussion Practice Exercises
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### References

Bittinger, M.L., Beecher, J.A., Ellenbogen, D.J., and Penna, J.A. (2009) *Algebra and Trigonometry: Graphs and Models (4<sup>th</sup> Edition)*. Boston: Pearson/Addison Wesley.  
 Blitzer, R. (2007) *Algebra and Trigonometry (3<sup>rd</sup> Edition)*. Upper Saddle River, NJ: Pearson/Prentice Hall.  
 Barnett, R.A., Ziegler, M.R. and Byleen, K.E. (2008) *College Algebra with Trigonometry*. Boston: McGraw Hill Higher Education.  
 Dugopolksi, M. (2011) *Trigonometry (3<sup>rd</sup> Edition)*. Boston: Addison Wesley.  
 Lial, J.H. and Schneider, D. (2009) *Trigonometry*. Boston: Pearson/Addison-Wesley.  
**Larson R., Hostetler R., (2012), *Algebra and Trigonometry (8<sup>th</sup> edition)*, Cengage Learning Asia.**

### Online Resources

Mindbites *Trigonometry Videos: Lectures and Lessons Online* Accessed October 11, 2012 from:  
<http://www.mindbites.com/category/31-trigonometry>

### Class Policies

- The required minimum number of quizzes for a 3-unit course is 3, and 4 for 4-unit course. No part of the final exam may be considered as one quiz.
- Cancellation of the lowest quiz is not allowed even if the number of quizzes exceeds the required minimum number of quizzes.
- As a general policy, no special or make-up tests for missed exams other than the final examination will be given. However, a faculty member may give special exams for
  - approved absences (where the student concerned officially represented the University at some function or activity).
  - absences due to serious illness which require hospitalization, death in the family and other reasons which the faculty member deems meritorious.
- If a student missed two (2) examinations, then he/she will be required to take a make up for the second missed examination.
- If the student has no valid reason for missing an exam (for example, the student was not prepared to take the exam) then the student receives 0% for the missed quiz.
- Students who get at least 89% in every quiz are exempted from taking the final examination. Their final grade will be based on the average of their quizzes and other prefinal course requirements. The final grade of exempted students who opt to take the final examination will be based on the prescribed computation of final grades inclusive of a final examination. Students who missed and/or took any special/make-up quiz will not be eligible for exemption.
- Learning outputs are required and not optional to pass the course.
- Mobile phones and other forms of communication devices should be on silent mode or turned off during class.
- Students are expected to be attentive and exhibit the behavior of a mature and responsible individual during class. They are also expected to come to class on time and prepared.
- Sleeping, bringing in food and drinks, and wearing a cap and sunglasses in class are not allowed.
- Students who wish to go to the washroom must politely ask permission and, if given such, they should be back in class within 5 minutes. Only one student at a time may be allowed to leave the classroom for this purpose.
- Students who are absent from the class for more than 5 meetings will get a final grade of 0.0 in the course.
- Only students who are officially enrolled in the course are allowed to attend the class meetings.

Approved by:

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Chair, Mathematics Department

April, 2014