DE LA SALLE UNIVERSITY
College of Science
Department of Mathematics

MATH112 – *Trigonometry for Chemistry, Physics and Math Majors*
Co-requisite: MATH111 *Prerequisite to: MATH114*

Instructor:_____ **Contact details:**_____
Consultation Hours:_____ **Class Schedule and Room:**_____

Course Description

This course covers functions, polynomial functions, exponential and logarithmic functions, trigonometric functions, trigonometric identities and equations, law of sine, law of cosine and solution 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)
Content and Organization (50%)	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
Grammar (30%)		No error	Between one and three errors	More than four errors
Bibliography (20%)		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	
		with no missed quiz	*With one missed quiz*
Average of quizzes	95%	65%	55%
Class participation, Homework, Seatwork, Learning output	5%	5%	5%
Final exam	-	30%	40%

Scale:

95-100%	4.0
89-94%	3.5
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 NUMBER	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.	**I FUNCTIONS AND THEIR GRAPHS** Functions Function Notation, Operations on Functions, and Types of Functions Inverse Functions Symmetry of a Graph **II POLYNOMIAL FUNCTIONS** Quadratic Functions The Remainder Theorem, The Factor Theorem, and Synthetic Division Rational Zeros of Polynomial Functions **III EXPONENTIAL AND LOGARITHMIC FUNCTIONS** Exponents and the Number *e* Exponential Functions Logarithmic Functions Properties of Logarithmic Functions Exponential and Logarithmic Equations **IV TRIGONOMETRY** Circle (review/recall only) 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 The Tangent, Cotangent, Secant, and Cosecant of Real Numbers **V ANALYTIC TRIGONOMETRY** The Eight Fundamental Identities Proving Trigonometric Identities Sum and Difference Identities Double-measure and Half-measure Identities	Week 1-4 Week 5-7 Week 7-9 Week 9-12	Seatwork Boardwork Lecture and Discussion Practice Exercises

	Inverse Trigonometric Functions Trigonometric Equations Inverse Trigonometric Equations **VI APPLICATIONS OF TRIGONOMETRY** Solutions of Right Triangles -Angle of Elevation/ Depression The Law of Sines The Law of Cosines **FINAL EXAM**	 Week12-13 Week 14	Seatwork Boardwork Lecture and Discussion Practice Exercises

References

Bittinger, M.L., Beecher, J.A., Ellenbogen, D.J., and Penna, J.A. (2009) *Algebra and Trigonometry: Graphs and Models (4th Edition)*. Boston: Pearson/Addison Wesley.

Blitzer, R. (2007) *Algebra and Trigonometry (3rd 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 *(3rd Edition)*. Boston: Addison Wesley.

Lial, J.H. and Schneider, D. (2009) Trigonometry. Boston: Pearson/Addicon-Wesley.

Larson R., Hostetler R., (2012), *Algebra and Trigonometry (8th 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

1. 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.
2. Cancellation of the lowest quiz is not allowed even if the number of quizzes exceeds the required minimum number of quizzes.
3. 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
   A. approved absences (where the student concerned officially represented the University at some function or activity).
   B. absences due to serious illness which require hospitalization, death in the family and other reasons which the faculty member deems meritorious.
4. If a student missed two (2) examinations, then he/she will be required to take a make up for the second missed examination.
5. 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.
6. 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.
7. Learning outputs are required and not optional to pass the course.
8. Mobile phones and other forms of communication devices should be on silent mode or turned off during class.
9. 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.
10. Sleeping, bringing in food and drinks, and wearing a cap and sunglasses in class are not allowed.
11. 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.
12. Students who are absent from the class for more than 5 meetings will get a final grade of 0.0 in the course.
13. Only students who are officially enrolled in the course are allowed to attend the class meetings.

Approved by:

Dr. Arturo Y. Pacificador, Jr.
Chair, Department of Mathematics

April, 2014