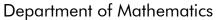


DE LA SALLE UNIVERSITY

College of Science





before final

exam

MATH113 - Analysis 1 Proroquisito:MATH111

Prerequisite:MATH111	Prerequisite to: MATH114
Instructor:Consultation Hours:	Contact details:Class Schedule and Room:

Course Description

This is 1st course in Analysis covering basic concepts of plane analytic geometry, limits and continuity,

derivatives and their applications.				
Langia y Outanna				
Learning Outcomes				
On completion of this course, the student is expec		omes in line with		
the Expected Lasallian Graduate Attributes (ELGA	A)			
ELGA	Learning Outcome			
Critical and Creative Thinker	At the end of the course, the student will	be able to		
Effective Communicator	apply limits, continuity and differentiation in solving			
Lifelong Learner	various conceptual and real-world problems.			
Service-Driven Citizen				
As evidence of attaining the above learning outcome	mes, the student is required to submit the	following during		
the indicated dates of the term.	·			
Learning Outcome	Required Output	Due Date		
At the end of the course, the student will be	Collaborative activity on sketching the	Week 3		
able to apply limits, continuity and	graph of conic sections and other			
differentiation in solving various conceptual	functions using graphmatica software.			
and real-world problems.	Collaborative activity on solving	1 week		

optimization problems, rate of change

and related rates problems.

Rubric for assessment Needs **CRITERIA** Excellent (4) Good (3) Satisfactory (2) Improvement (1) Understanding The solution shows a The solution The solution is There is no shows that student not complete (50%)deep understanding solution, or the of the problem has a broad indicating that solution has no including the ability to parts of the understanding of relationship to the identify the the problem and problem are not task. appropriate understood. the major concepts mathematical necessary for its concepts and solution. information necessary for its solution. Uses a very efficient Strategies and Uses strategy that Uses a strategy No evidence of a strategy or **Procedures** strategy leading leads to a solution that is partially procedure uses (15%)directly to a solution. of the problem. useful, leading All parts are Applies procedures some way toward strategy that does not help solve the correct and a a solution but not accurately to correctly solve the problem and correct answer is to a full solution problem. verifies the result. achieved. of the problem. Some parts may be correct but a correct answer is not achieved. Communication There is a clear, There is a clear There is some There is no effective explanation, (10%)explanation and use of explanation or the detailing how the appropriate use of appropriate solution cannot be problem is solved. understood or it is mathematical accurate unrelated to the There is a precise and mathematical representation appropriate use of representation. but explanation is problem. mathematical incomplete and terminology and not clearly notation. presented.

Integration (10%)	Demonstrates integration of the concepts presented	Demonstrates some integration of the concepts presented	Demonstrates limited integration of the concepts presented	Demonstrates no integration of the concepts presented
Accuracy of Computations/ Solutions (15%)	Computations / solutions are correct and explained correctly	Computations/ solutions are correct but not explained well.	Computations/ solutions have some errors.	Incorrect computations/ solutions

Additional Requirements

At least 4 quizzes, 1 final exam, Seatwork, Assignments, Recitation, Group Work

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

Learning	Culminating Topics	Week	Learning Activities
Outcome		No.	
At the end of	I. ANALYTIC GEOMETRY	Week	Sketch conic sections.
he course,	1.1 Coordinates	1-2	Outside activity: Explore Graphmatica to
he students	1.2 Parabolas		examine graphs of parabolas, ellipses
will	1.3 Ellipses		and hyperbolas and other equations.
apply	1.4 Hyperbolas		Set up framework for application to future
appropriate			concepts.
mathematical	II. FUNCTIONS, LIMITS	Week	Introduce use of math software to sketch
concepts,	AND CONTINUITY	2-5	graphs of some special functions.
processes,	2.1 Functions and their		Give an overview of the nature of limits
ools, and	Graphs (special		and its role in calculus.
echnologies	functions)		Outside activity: The students may be
n the	2.2 Graphical Approach to		asked to read the discussion on of the
solution to	Limits of Functions		nature of limits at the website
/arious	2.3 Definition of the Limit of		analyzemath.com/c/calculus/limits
conceptual	a Function and Limit		 Introduce the concept of limits using
and real-	Theorems		intuitive and graphical approach.
world	2.4 One-sided Limits		 Rigorous discussion on the definition of
oroblems.	2.5 Infinite Limits		limits using epsilon and delta.
	(vertical asymptotes)		 Use appropriate theorems in evaluating
	2.6 Limits at Infinity		limit of several types of functions.
	(horizontal /oblique		 Discuss continuity of functions at a point
	asymptotes)		and on an interval and its implications.
	2.7 Continuity of a Function		(graphs & Intermediate Value
	at a Number		Theorem)
	2.8 Continuity of a		 Illustrate the squeeze theorem.
	Composite Function, Continuity on an Interval		 Pre-discussion exercises, instruction
	and the Intermediate		add-ons and practice exercises may
	Value Theorem		be taken from the following sites
	2.9 Continuity of		 analyzemath.com/calculus/limits
	Trigonometric Functions		 archives.math.utk.edu/visual.calcul
	and the Squeeze		us
	Theorem		 tutorial.math.lamar.edu

	e notion of tangent line to a point using graphical and
3.1 The Tangent Line and intuitive a	proach.
	erivative of a function and
	the concept of the slope of
	t line to a curve at a point.
- Examino for	ationship between continuity
and different	
Liberton Colleg Designed and the Property difference	ntiation theorems on and trigonometric functions.
2 4 Derivetives of	chain rule as applied to
Trigonometric Functions algebraic	unctions and the chain rule
3.5 The Derivative of a in general	
Composite Function and Piscuss imp	icit differentiation for implicit
the Chain Rule functions.	·
	interpretation of derivative
Pational Exponents and as rate of	change and its various
Implicit Differentiation Plactical a	oplications.
2.7 Postilinger Motion and	on exercises, instruction
I I I I I I I I I I I I I I I I I I I	nd practice exercises may rom the following sites
	emath.com/calculus
	es.math.utk.edu/visual.
calcul	
• tutoria	.math.lamar.edu
	it differentiation to solving
	es problems.
	ents to mathematical proofs
1/4///	ning results.
- indutate div	distinguish the difference ocal and absolute extrema.
4.1 Related Rates	cai and absolute extrema.
4.2 Rolle's Theorem & Mean	
Value Theorem	
4.3 Maximum and Minimum • Expose stud	ents to different applications
Function Values of relative	and absolute extrema.
4.4 Applications Involving an Discuss imp	ortant concepts in analyzing
Classed Interned	or of functions.
4.5 Januarian and	mprehensive view of curve
Decreasing Functions sketching studied.	using various concepts
and the First Derivative	on exercises, instruction
lest add-ons a	nd practice exercises may
4.6 Concavity and Points of he taken to	om the following sites
Inflection and the	emath.com/calculus
	es.math.utk.edu
Graph of Functions 4.7 Sufficiently of Sketching • tutoria	.math.lamar.edu
4.8 Additional Applications	
	<u>l</u>
of Absolute Extrema	

References

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Edwards, C.H. and Penney, D.E. (2008) Calculus: Early Transcendentals (7th ed.) Upper Saddle River, NJ: Pearson/Prentice Hall.

Larson, R.E, Hostetler, R. & Edwards, B.H. (2008) Essential Calculus: Early Transcendental Functions. Boston: Houghton Mifflin

Leithold, L. (2002) The Calculus 7 (Low Price Edition) Addison-Wesley

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Smith, Robert T., Minton, Roland B. (2012), Calculus, New York: McGraw Hill

Tan, Soo T. (2012) Applied Calculus for the Managerial, Life, and Social Sciences: A Brief Approach,

Australia : Brooks/Cole Cengage Learning Vargerg, D.E., Purcell, E.J. & Rigdon, S.E. (2007) *Calculus* (9th ed) Upper Saddle River, N.J.:Pearson **Education International**

Free Calculus Tutorials and Problems Accessed October 11, 2012 from http://analyzemath.com/calculus/ Visual Calculus Accessed October 11, 2012 from http://archives.math.utk.edu/visual.calculus tutorial.math.lamar.edu

Dawkins, P. (2012) Paul's Online Math Notes Accessed October 11, 2012 from http://tutorial.math.lamar.edu

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 pre-final 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:
Chair, Department of Mathematics

April, 2014