

ANALYSIS I

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

LA SIERRA UNIVERSITY

PRELIMINARY SYLLABUS

MATH 431 (4 UNITS)

WINTER 2008

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Text Required: Steven R. Lay: *Analysis with an Introduction to Proof* 4th Edition, 2005 Pearson Education, Upper Saddle River NJ; ISBN 0-13-148101-0 [Note: This textbook is intended for this class as well as MATH431 and 432. We will supplement the textbook with other material.

Bulletin Description The topology of the real line, metric spaces, uniform convergence and continuity, the derivative, the Riemann integral, outer measure. Offered alternate years. Prerequisite: MATH 415 or consent of the instructor.

Objective To introduce the student to the elementary concepts of real analysis and a rigorous background for the calculus. Students will learn to construct and present proofs that are complete, logical and acceptable in the field of mathematics.

Course Requirements

1. Homework Homework will be assigned on a regular basis and is due at the beginning of the designated class period. Late homework will not be accepted. It is impossible to pass the class without turning in most of the homework. The homework will have two emphases, a. computational to establish an understanding of the concepts and b. demonstration to establish why concepts are true or false. You will be expected to present at least five of your homework proofs on the board in class. This presentation will include class discussion of your proof and how it can be improved.

2. Tests and Exams Tests and exams determine most of your grade for this class. Make up tests will be given only at the discretion of the instructor and only for extreme personal reasons. The final exam is required to pass the course.

3. Outside Reading You are required to read six articles from current journals and report on these in the manner specified in class. You are also required to find two helpful web sites that feature Analysis topics, other than listed in my "Helpful URL's" site. To report on the web sites you find. List the URL, write a brief summary of materials you found that were helpful to you, and print out several web pages as samples of what you found.

4. Essays **1.** Take your textbook and skim sections 12 through 23. Look especially at the examples. Write an essay of approximately 300 words. Address the following: what is this course about? What relationship do the examples in this book bear on your previous algebra (high school, etc) and calculus courses? (You will be graded 15% on style and 85% on content.)

2. Write a 1000 word essay on what you have learned in this class. Start with your essay #1 and compare your estimate of what the book was about and what you have actually studied. What areas do you feel you have improved the most in; what areas remain mysterious to you?

5. Attendance Attendance is expected and you are responsible for all material presented and assignments made in class. Being absent for 10% or more of the classes will result in an automatic failing grade.

6. Participation A portion of your grade is based on your participation in class. You are encouraged to ask questions in class. Asking questions can only help your participation grade. Cheating on tests, exams or papers means an automatic zero on that occasion, a letter to the dean, and possible further disciplinary action.

Plagiarism and Cheating You are encouraged to seek assistance from faculty or students in doing your homework. However work that is done primarily by someone else is unacceptable and may result in your failing the course. Plagiarism and/or cheating on tests, exams or papers means an automatic zero on that occasion, a letter to the dean, and possible further disciplinary action.

Disability La Sierra University complies with the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act of 1973. Any student with a documented disability (physical, learning, or psychological) needing academic accommodations should contact the Office of Disability Services (ODS) as early in the quarter as possible. All discussions will remain confidential. Please contact the ODS (La Sierra Hall, Suite 100 – x2450) for additional information. Students who qualify for accommodations, must bring their ODS paperwork to their instructor no less than 3 school days before they wish such accommodations to take effect.

Grading Scheme

		Grade assignment will approximate	
Homework & Essays	12%	75–100%	A range
In-Class Tests	53%	65–74%	B range
Final Exam	25%	50–64%	C range
Participation	5%	40–49%	D range
Outside Reading	5%	0–39%	F

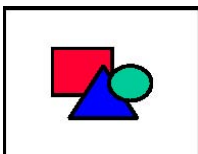
There are no such grades as "C-" or "D-" in this class.

Final Exam Tuesday March 18, 11:00 a.m.

Εἰ δὲ τις ὑμῶν λειπεται σοφίας,
αἰτειτω παρὰ τοῦ διδόντος Θεοῦ
πᾶσιν ἁπλῶς καὶ μὴ ονειδίζοντος,
καὶ δοθησεται αὐτῷ.

If any of you need wisdom, you
should ask God, and it will be
given to you. God is generous
and won't correct you for asking.

James I:5 (Nestle & CEV)



Hour	Monday	Tuesday	Wednesday	Thursday	Friday
8:00					
9:00	College Algebra	College Algebra		College Algebra	College Algebra
10:00	Elementary Algebra	Elementary Algebra		Elementary Algebra	Elementary Algebra
11:00	University Studies	Assembly		Chapel	Dept Mtg
12:00	Committee	Lunch	Lunch	Lunch	Lunch
1:00					
2:00	Office	Office	Office	Office	
3:00	Analysis		Analysis		
4:00	Analysis		Analysis		
5:00	CAS mtg				

Outline:

	DATE		Sections	Topics	Homework
Jan.	7	M	10	Natural Numbers and Induction	
	9	W	11	Ordered Fields	
	14	M	12	Completeness Axiom	
	16	W	13	Topology of the Reals	Essay #1 Due
*	21	M	<i>Holiday</i>	<i>M.L.King</i>	
	23	W	14	Compact Sets--Overview	
	28	M	Test 1	Chapter 3	
	30	W	16	Convergence of Sequences	
Feb.	4	M			
	6	W	17	Limit Theorems	
	11	M			
	13	W	18	Monotone and Cauchy Sequences	
	18	M			
	20	W	19	Subsequences	
	25	M			
	27	W	20	Limits of Functions	
Mar.	3	M	Test 2	Chapter 4	
§	5	W	21	Continuous Functions	
	10	M			Essay #2 Due
	12	W			
	18	T		Final Exam	

* Last day to drop a class with no record on transcript is Tuesday, January 22.

§ Last day to drop a class with a "W" grade is Thursday, March 6.

Final Exam Tuesday March 18, 11:00 a.m.

Analyses vs Analysis. Analysis is a word that is very commonly used in science and laboratories where testing of structures and chemicals is done. It refers to the study of the parts of a whole or the identification of the components of a substance. There is another word analyses that confuses many as there is only slightest of difference in spelling, and the pronunciation of the two words remains almost the same. However, despite similarities, there are differences between analysis and analyses that will be discussed in this article.

Meaning of analysis. What does analysis mean? Information and translations of analysis in the most comprehensive dictionary definitions resource on the web.Â an investigation of the component parts of a whole and their relations in making up the whole.

analysis, analytic thinking(noun). the abstract separation of a whole into its constituent parts in order to study the parts and their relations.

analysis(noun). a form of literary criticism in which the structure of a piece of writing is analyzed. analysis(noun).