MATHEMATICS 3220-001
Introduction to Analysis II
Summer semester 2000

text:	*An Introduction to Analysis, first or second edition* by William R. Wade
when:	MWF 8:45-9:45
where:	JWB 333
instructor:	Prof. Nick Korevaar
office:	JWB 218
telephone:	581-7318
email:	korevaar@math.utah.edu
office hours:	These may change after June 7! M 10-11 a.m., T 10-11 a.m., W 1:30-2:30 p.m., Th 12:30-2:30 (JTB 110), F 10-11:30 a.m., and by appointment.
class tutor:	Darrell Poore, email c-pedj@math.utah.edu, is our grader and class tutor. Tutorials Thurs 12:30-3:00 in JTB 110

prerequisites: Math 3210; i.e. the material in *Elementary Analysis: The Theory of Calculus* by Kenneth Ross, chapters I-V, or chapters 1-4, 6-7 in the second edition of Wade. In Math 3220 we also assume you have completed either Calculus 1210-1220-2210 or A.P. Calculus 1250-1260, as well as Linear Algebra, Math 2270. If this is not the case, please see me.

course outline: This is the second semester of our Department's year-long *Introduction to Analysis* course, and it covers multivariable analysis concepts. We will begin by briefly reviewing the algebraic structure of $\mathbb{R}^n$ (which you have studied in depth in Math 2270). Next we discuss metric and topological properties on $\mathbb{R}^n$, and continuous functions from $\mathbb{R}^n$ to $\mathbb{R}^m$. This has much in common with your one-variable discussions in Math 3210 but is geometrically more interesting because we are working in higher dimensions. Following continuity, we discuss multivariable differential Calculus, including key definitions such as differentiability and key theorems such as the chain rule and the inverse function theorem. We will discuss integration towards the end of the course, talking carefully about the Riemann integral. Hopefully we will still have time to talk about change of variables, integrals over curves and surfaces and an introduction to differential forms and the general Stoke's Theorem. You have seen a first treatment of these latter topics in the third semester of Calculus, Math 2210, and we will try to build on the background you have from that course.

As you know from the first semester of this sequence, we want you to be developing your skills at logical and rigorous work, and in its presentation. Beyond the particular results you are learning in this course, the language and ways of thinking which you are also developing are fundamental in mathematics; this sequence is your bridge to higher level mathematics topics, and I will try to indicate some of the connections when appropriate.

There are now two editions of our textbook available, and you may use either one of them. The text for the coming academic year will probably be the second edition, but this past year the first edition was used. In any case, almost all sections and homework problems in the two editions are related and I will be careful to mention their locations in both books, or provide supplemental xerox material when one edition is deficient. Our aim is to cover chapters 8-13 and part of 5 in the second edition, with the core material being in chapters 8-9 and 11-12. In the first edition this corresonds to chapters 5-8, with core material 5-7. I will not attempt to give a day to day description of covered material; this course does not seem to lend itself to such regimentation. However, I do list the exam dates below.

grading: There will be three midterms, a comprehensive final examination, and homework. Each midterm will count for 15% of your grade, homework will count for 25%, and the final exam will count for 25%. All exams will be given in-class, including the final. I will give you full points on 5% of your grade as soon as you have completed a 20 minute appointment with me, in the first two weeks of this session. I hope this gives us a chance to begin getting acquainted.

Homework will be assigned at each lecture and will be collected weekly, on the immediately following Friday. (I will keep course information such as homework assignments available on-line, at my home page **http://www.math.utah.edu/korevaar** A homework grader will grade your assignments, and I am also hoping to set up some tutorial sessions especially for this class. (The Departmental tutors are sometimes more effective for the lower-level math classes.) Homework should be thought about and written up individually, *but* if you have puzzled on a problem for a while it is completely appropriate and encouraged that you consult with classmates (or me) for further progress.

important dates:		
	May 21:	Last day to drop (delete) class
	May 26:	Last day to add a class
	June 23:	Last day to withdraw from class
	June 7:	Exam 1
	June 28	Exam 2
	July 19	Exam 3
	August 3	Final Exam, 7:30-9:30 a.m.

ADA statement: The American with Disabilities Act requires that reasonable accomodations be provided for students with physical, sensory, cognitive, systemic, learning, and psychiatric disabilities. Please contact me at the beginning of the semester to discuss any such accommodations for the course.