MATH 425b
Spring 2016

Professor  Ken Alexander  Phone:  213-740-3797

Office:  KAP 424E.  It is inside suite 424, in the corner of the building that’s behind you and to your right as you exit the elevator.

Email:  alexandr@usc.edu  Web Page:  http://www-bcf.usc.edu/~alexandr/ . Links on this page will take you to course information and homework assignments.

Office hours:  Monday 1-3; Wednesday 11-12; or by appointment.  Best to call or email at least 1-2 hours ahead, for an appointment outside office hours.  (No appointment necessary for office hours, of course.)

Teaching Assistant:  TBA

Text:  Principles of Mathematical Analysis (3rd Edition) by W. Rudin

Homework will be given approximately weekly.  On each assignment a few selected problems will be graded.  It is OK to help each other solve homework problems, but it's not OK to turn in essentially identical solutions--once you have discussed homework problems so that you understand better what to do, you should write the solutions on your own.  Homework will be accepted up to 2 lectures late, with a 20% penalty.  Not accepted more than 2 lectures late.  The deadline for both on-time and late homework is the end of the lecture hour (not the end of the day.)  Homework should be turned in in either (i) in lecture, or (ii) by taking it to the Mathematics Department office where it can be time-stamped.  Do not place homework directly in my mailbox!

Exams:  Two midterms plus final.  Tentative midterm dates are Friday February 19 and Wednesday March 30.  The final will be part take-home and part in class.  The in-class final is Monday May 11, 8 - 10 am.  The final is cumulative but with greater emphasis on material after the second midterm.  Locations to be announced.

Missed exams:  There will be no makeup exams.  In exceptional cases, with a written excuse, if you miss an exam I will base your grade on the exams you did take.

Grading:  Homework 30%, midterms 20% each, final 30%.  No fixed quotas of A’s, B’s etc.  The number of points needed for a particular grade is not fixed in advance--if the exam turns out to be difficult and scores are low, then fewer points are needed for an A, for a B, etc.

Auditing:  If you want to just sit in on the class, you must register for an audit.

Material to be covered:  Most of Chapters 7-10; occasional additional material not from the text.  See the approximate schedule on the next page.  For those who were not in 425a with me last semester—we covered up through 7.12 in Rudin.  I will briefly review this material before proceeding with the rest of Chapter 7,

Additional help:  There are TA's in the Math Center Mon. - Fri., generally 8 am - 6 pm.  Most of them can help you with Math 425b.
Approximate schedule:
Lectures 1-2: (Ch. 7) Uniform convergence—review, consequences
Lectures 3-7: Equicontinuity, compactness in C[0,1], Stone-Weierstrass Theorem
Lectures 8-9: (Ch. 8) Power series, algebraic completeness of the complex numbers
Lectures 10-13: Fourier series
Lecture 14: Gamma function, Stirling’s formula
Lectures 15, 17-18: (Ch. 9) Linear algebra review, norms and continuity of linear transformations
Lecture 16: Exam #1
Lectures 19-22: Differentiation in R^n
Lectures 23-26: Inverse function theorem, implicit function theorem, rank theorem
Lecture 27: Determinants
Lecture 28: Differentiation of integrals
Lectures 29, 31-34: (Ch. 10) Integrals in R^n, primitive mappings, partitions of unity, change of variable
Lecture 30: Exam #2
Lectures 35-38: Differential forms, change of variable, differentiation of forms
Lectures 39-41: Simplexes, chains, orientation
Lectures 42-43: Stokes Theorem, closed and exact forms

Everything in this syllabus is in principle tentative; if necessary it will be adjusted during the semester.

Statement for Students with Disabilities: Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.
Statement on Academic Conduct and Support Systems

**Academic Conduct:** Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Section 11, *Behavior Violating University Standards*. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, [http://policy.usc.edu/scientific-misconduct/](http://policy.usc.edu/scientific-misconduct/).

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Office of Equity and Diversity [http://equity.usc.edu/](http://equity.usc.edu/) or to the Department of Public Safety [http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us](http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us). This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The Center for Women and Men [http://www.usc.edu/student-affairs/cwm](http://www.usc.edu/student-affairs/cwm) provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.