

MA 515: ANALYSIS I
FALL 2017, SECTION 001, SYLLABUS

Lectures: Monday, Wednesday and Friday, 10:40 AM – 11:30 AM, 01218 SAS.

Course Description:

- Review of Metric spaces (Convergence, Cauchy sequences, Completeness, Banach fixed point theorem).
- Normed spaces, Banach spaces (Compactness, Linear operators, Linear functionals, Dual spaces, Hahn-Banach theorem, Reflexive spaces, Uniform boundedness theorem, Strong and weak convergence, Open mapping theorem, Closed graph theorem).
- Inner product spaces, Hilbert spaces (Orthonormal sets and sequences, Projection theorem, Riesz representation theorem).

Prerequisite: MA 425 and MA 426 Mathematical Analysis I and II.

Principle Text:

- *Introductory Functional Analysis with Applications*, by Erwin Kreyszig.

Supplementary Text:

- *Lecture Notes on Functional Analysis with Applications to Linear PDEs*, by Alberto Bressan.

Instructor information:

- Instructor: Tien-Khai Nguyen
- Office: 3248, SAS Hall
- Phone: 9195132287
- Email: khai@math.ncsu.edu

Office hours: Tuesday: 15:00–16:00, Wed: 14:00–15:00 and Thursday: 15:00–16:00.

Assignments:

- There will be 6 assignments, due *September 11, September 25, October 9, October 23, November 6, and November 20*. Preferably, the assignments will be typed in LaTeX. If you need help, feel free to stop by my office hours or email me to set up an appointment
- The assignments will be graded as follows: I will choose some problems (usually 3 or 4) that I will grade in detail and provide feedback on, and the rest of the assignment will be graded for completeness.
- Late homework will NOT be accepted. I will make no exceptions for this rule.
- The lowest score among the homework assignments will be dropped.

Tests and Exams: There will be two in-class tests and a final exam.

- **M, October 16: Test 1** - covering material up to October 6.
- **M, November 13, Test 2** - covering material up to November 3.
- **F, December 08, 08AM–11AM: Final exam** - cumulative.
- **Missed tests/exams:**
 - + There will be NO makeup tests/exams. If you have any conflicts with the assigned dates of the tests please contact me by email at least two weeks before the exam.
 - + If you miss a test without a valid excuse, a zero will be averaged into your grade.
 - + If you are forced to miss a test, an excuse from a doctor or other appropriate authorities must be presented.

+ If the excuse is accepted, your other course work will be adjusted so that you will not be penalized.

- All tests are closed book/notes.

Grading policy: The final grade will be based on

- Assignments (50% of final grade).
- Two in-class test (10 % each).
- Final exam (30%).

Bonus points: Attendance and especially class participation will be used in determining border grades. Bonus point will be awarded for work on the board in class and extra homework.

Final grades will be assigned as follows:

Total performance	Letter grade	Total performance	Letter grade
$\geq 97\%$	A+	$\geq 74\%$	C+
$\geq 93\%$	A	$\geq 70\%$	C
$\geq 88\%$	A ⁻	$\geq 67\%$	C ⁻
$\geq 85\%$	B ⁺	$\geq 64\%$	D ⁺
$\geq 80\%$	B	$\geq 60\%$	D
$\geq 77\%$	B ⁻	$\geq 55\%$	D ⁻
		$< 55\%$	F

Email and Moodle: I will frequently use email to contact with announcements or other information, so please check your email regularly. Moreover, I will post all pertinent materials, announcements and homework on Moodle, so make sure you check the site regularly as well (<http://moodle.wolfware.ncsu.edu>).

Academic Integrity: Students are required to comply with the university policy on academic integrity found in the Code of Student Conduct at <http://policies.ncsu.edu/policy/pol-11-35-01>.

Accommodations: Reasonable accommodation will be mad for students with verifiable disabilities. In order to take advantage of available accommodations, students must inform the instructor and register with the NCSU Disability Services Office.

Other important dates

- T, August 22: Last day to add a course without permission.
- T, August 29: Census Date/Official Enrollment Date.
- M, Sep 4: Holiday (Labor Day); University closed.
- Th-F, Oct 5-6: Fall break.
- F, Oct 13: Drop/Revision Deadline.
- W-F, Nov 22-24: Thanksgiving Break; No classes.
- F, Dec 01: Last day of classes.