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TENTATIVE SYLLABUS - SUBJECT TO CHANGE - THE FINAL AND NORMATIVE SYLLABUS WILL BE AVAILABLE IN MID SEPTEMBER

Math 315 Elementary Analysis Fall 2013 CRN 14660

Syllabus Version 1

- MATH 315 CRN 14660. Meets Monday, Tuesday, Wednesday, Friday in 306 Deady from 10:00 to 10:50
- Office Hours: Monday, Wednesday, Friday 09:00-10:00 or by appointment.
- Text: Ross, **Elementary Analysis: the theory of calculus any edition**.
- **Organization**. Homework is probably the most important activity in the course in terms of helping you internalize the material. Homework will be due each Tuesday on the material of the previous week. The Monday class period will be a discussion section for the homework to be due the subsequent day.
- **Grades:**
    - 100 points Homework and Quiz Average (The 2 lowest scores from the combined list of HW and QZ scores will be dropped)
    - 100 points Exam #1 Wednesday 23 October 2013 (Week 4)
    - 100 points Exam #2 Wednesday 20 November 2013 (Week 8)
    - 200 points Final Exam 10:15 Monday, December 9, 2013.
    - An incomplete can be assigned when the quality of work is satisfactory but a minor yet essential requirement of the course has not been completed for reasons acceptable to the instructor (NOTE: this grade requires a contract to be completed). **According to faculty legislation, final exams may not be given early under any circumstances**. Your final grade will be assigned on the basis of the total point score of 500 points. Any student getting at least a B on the final will receive at least a C- in the course; no student can pass the course unless they receive a grade of D or better on the final exam. You must bring your photo ID to all exams. You may bring a 3x5 inch index card with any formulas on it to any exam or quiz if you wish. Similarly, you may bring with you a hand held graphing calculator to any exam or quiz if you wish.

- **Teaching Associate**: Ekaterina Puffini

See Academic Calendar

Assignments (Tentive and subject to change)

- Week 1 (30 September - 4 October 2013): Read Sections 1-3.
  - Do page 5: 1.1, 1.2, 1.3, 1.12;
  - Do Page 12: 2.1, 2.2, 2.3, 2.4;
  - Do Page 18: 3.1, 3.2, 3.3, 3.6, 3.7
- Week 2 (07 Oct - 11 Oct 2013) Read Sections 4-5.
  - Do Page 25: 4.1(a-e,k-n,s-w), 4.2 (a-e,k-n,s-w), 4.3 (a-e,k-n,s-w), 4.7, 4.14;
  - Do Page 28: 5.1, 5.2, 5.3, 5.6.
- Week 3 (14 Oct-18 Oct 2013): Read Sections 7-9.
  - Do Page 36: 7.1, 7.2, 7.3 (a,b,c,m,n,o,s,t), 7.5;
  - Do Page 42: 8.1, 8.2, 8.7, 8.8;
  - Do Page 52: 9.1, 9.2, 9.6, 9.8
- Week 4 (21 Oct-24 Oct 2013) : Review, **Exam**, Read Section 10.
  - Do Page 62: 10.1, 10.3, 10.6, 10.7, 10.8, 10.9, 10.10
- Week 5 (28 Oct-01 Nov 2013) : Sections 11, 12.
  - Do Page 73 11.1, 11.3, 11.4, 11.5.
  - Do Page 77: 12.1, 12.3, 12.4, 12.5, 12.12, 12.14
- Week 6(31 Oct - 4 Nov 2013). Sections 14, 15.
  - Do Page 99: 14.1, 14.2, 14.3, 14.4, 14.6, 14.14.
  - Do Page 104: 15.1, 15.2, 15.3,15.4
- Week 7 (11 Nov - 15Nov 2013). Sections 16, 17.
  - Do Page 113: 16.1, 16.4, 16.6, 16.7.
  - Do Page 123: 17.1, 17.2, 17.3, 17.5, 17.6, 17.10, 17.14.
- Week 8 (18 Nov-22 Nov 2013). Review, **Exam**, Read Section 18.
  - Do Page 131: 18.1, 18.2, 18.3, 18.6, 18.7, 18.12.
- Week 9 (25 Nov-27 Nov 2013). Read Sections 23, 24.
  - Do Page 176: 23.1, 23.2, 23.3, 23.5, 23.9;
  - Do Page 182: 24.1, 24.2, 24.3, 24.4, 24.5, 24.6, 24.7, 24.8
- Week 10 (02 Dec-06 Dec 2013) : Read Section 25, Review.
  - Do Page 190 but don't hand in: 25.2, 25.3, 25.4, 25.8, 25.12
- Week 11 June 8-June 12 2009 Final Exam FINAL EXAM 10:15 Monday, December 9, 2013.

Course objective The course serves as a transition between the computationally oriented calculus sequences (Math 251/2/3 and Math 281/2) and some of the more theoretically oriented 400 level courses (the analysis sequence Math 413/4/5 and the complex variables sequence Math 412/3 come to mind as exemplars). More importantly, it serves as an entry into proof based mathematics supplementing the course on proof theory (Math 307). The course will begin with an introduction to the basics - natural numbers, rational numbers, real numbers. A rigorous treatment of limits (sequential limits, monotone sequences, cauchy sequences, subsequences, limit points, lim sup, lim inf etc) will be given. A brief introduction to metric spaces will be given (compactness, connectedness, etc). Alternating series and integral tests will be discussed. Continuity, compactness,

uniform continuity, and limits of functions will be discussed. If time permits, power series and L'Hospital's rule will be treated. At this stage in their mathematical education, students should be familiar with the mechanics of calculus. What this course will stress are the rigorous foundations of the subject - there will be lots of epsilon-delta proofs.

Mathematics Department Undergraduate Grading Standards November 2011 There are two important issues that this grading policy recognizes.

- (1) Mathematics is hierarchical. A student who is given a grade of C or higher in a course must have mastery of that material that allows the possibility of succeeding in courses for which that course is a prerequisite.
- (2) Some mathematics courses are primarily concerned with techniques and applications. In such courses student success is measured by the student's ability to model , successfully apply the relevant technique, and bring the calculation to a correct conclusion. The department's 100-level courses and most calculus courses are examples in this category although these are not the only examples. Other courses are primarily concerned with theoretical structures and proof. In such courses student success is measured by the student's ability to apply the theorems and definitions in the subject, and to create proofs on his or her own using the models and ideas taught during the course. Many courses are partly hybrids incorporating both techniques and applications, and some element of theory. Some lean more toward applications, others more toward theory. This course has both applications and theory.

Rubric for applied courses:

- A: Consistently chooses appropriate models, uses correct techniques, and carries calculations through to a correct answer. Able to estimate error when appropriate, and able to recognize conditions needed to apply models as appropriate.
- B: Usually chooses appropriate models and uses correct techniques, and makes few calculational errors. Able to estimate error when prompted, and able to recognize conditions needed to apply models when prompted.
- C: Makes calculations correctly or substantially correctly, but requires guidance on choosing models and technique. Able to estimate error when prompted and able to recognize conditions needed to apply models when prompted.
- D: Makes calculations correctly or substantially correctly, but unable to do modeling.
- F: Can neither choose appropriate models, or techniques, nor carry through calculations.

Modeling, in mathematical education parlance, means the process of taking a problem which is not expressed mathematically and expressing it mathematically (typically as an equation or a set of equations). This is usually followed by solving the relevant equation or equations and interpreting the answer in terms of the original problem.

Rubric for pure courses:

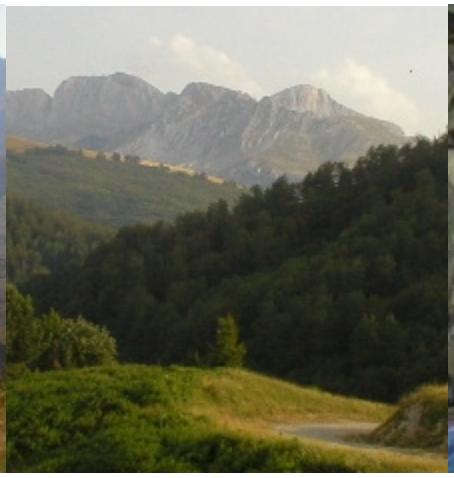
- A: Applies the important theorems from the course. Constructs counterexamples when hypotheses are weakened. Constructs complete and coherent proofs using the definitions, ideas and theorems from the course. Applies ideas from the course to construct proofs that the student has not seen before.

- B: Applies the important theorems from the course. Constructs counterexamples when hypotheses are weakened. Constructs complete and coherent proofs using the definitions, ideas and theorems from the course.
- C: Applies the important theorems from the course when the application is direct. Constructs simple proofs using the de nitions when there are very few steps between the de nitions and the conclusions. Explains most important counterexamples.
- D: Can do some single step proofs and explain some counterexamples.
- F: Unable to do even single step proofs or correctly use de nitions.

Many courses combine pure and applied elements and the rubrics for those courses will have some combination of elements from the two rubrics above. Detailed interpretation of the rubrics depends on the content and level of the course and will be at the discretion of instructors. Whether to award grades of A+ is at the discretion of instructors.

Academic dishonesty

Academic Misconduct: The University Student Conduct Code (available at conduct.uoregon.edu) defines academic misconduct. Students are prohibited from committing or attempting to commit any act that constitutes academic misconduct. By way of example, students should not give or receive (or attempt to give or receive) unauthorized help on assignments or examinations without express permission from the instructor. Students should properly acknowledge and document all sources of information (e.g. quotations, paraphrases, ideas) and use only the sources and resources authorized by the instructor. If there is any question about whether an act constitutes academic misconduct, it is the studentsÕ obligation to clarify the question with the instructor before committing or attempting to commit the act. Additional information about a common form of academic misconduct, plagiarism, is available at http://library.uoregon.edu/guides/plagiarism/students/index.html see also http://uodos.uoregon.edu/StudentConductandCommunityStandards/AcademicMisconduct/tabid/248/Default.aspx.


To rest on the blue of the day, like an eagle rests on the wind, over the cold range, confident on its wings and its breadth.

Web page spun on 18 May 2013 by Peter B Gilkey 202 Deady Hall, Department of Mathematics at the University of Oregon, Eugene OR 97403-1222, U.S.A. Phone 1-541-346-4717 Email:peter.gilkey.cc.67@aya.yale.edu of Deady Spider Enterprises