SYLLABUS FOR MATH 4516 (Spring 2017)

*Topics in Analysis*

**INSTRUCTOR:** Bert G. Wachsmuth
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**CLASS MEETINGS**: MW 12:30pm – 1:45pm

**OFFICE HOURS**: MW 2:00pm – 2:30pm and by appointment
 Office: Science Hall 118 D (formerly McNulty Hall)

**TEXT:** Online text at <http://www.mathcs.org/analysis/reals> (available for free)

 Kolmogorov and Fomin: *Introductory Real Analysis* (a *Dover* book)

In addition we will make use of a computer algebra system, either Mathematica or Wolfram Alpha, or maybe both. You should visit the CH Help Desk to obtain the latest version of Mathematica. Wolfram Alpha is available for free through the web interface at <http://www.wolframalpha.com/>

You will also need the latest copy of Dyknow.

**COURSE CATALOGUE DESCRIPTION:** Consequences of continuity, differentiability and integrability in Rn; introduction to metric spaces. Lebesgue integration.

Prerequisites: MATH 3515. 3 credits

**PLAGIARISM & CHEATING*:*** Misrepresentation of someone else’s work as one’s own is a grave violation of academic ethics. This includes all graded assignments and examinations. Any material that is not your own work needs to be properly indicated and cited. This includes any work produced together with fellow students. You MUST indicate any sources of help outside of the course text(s) and your own work, including the names of students with whom you worked, internet resources or other sources of help. Failure to do so constitutes a violation of academic integrity (see below). When in doubt, cite or ask your instructor.

**STUDENTS WITH DISABILITIES:** It is the policy and practice of Seton Hall University to promote inclusive learning environments. If you have a documented disability you may be eligible for reasonable accommodations in compliance with University policy, the Americans with Disabilities Act, Section 504 of the Rehabilitation Act, and/or the New Jersey Law against Discrimination. Please note, students are not permitted to negotiate accommodations directly with professors. To request accommodations or assistance, please self-identify with the Office for Disability Support Services (DSS), Duffy Hall, Room 67 at the beginning of the semester. For more information or to register for services, contact DSS at (973) 313-6003 or by e-mail at DSS@shu.edu. **Link to Disability Policy -** <http://www.shu.edu/offices/disability-support-services/faculty-syllabus-statement.cfm>

**GRADE:** The grade is determined by the following scores:

* Midterm: 100 points
* Final exam: 100 points
* Homework: 100 points
* Quizzes: 100 points

Please note that homework will be assigned, collected, and graded. I will drop the worst two homework scores automatically. There are no make-up exams or quizzes unless a student is seriously ill. I will also ask students to solve selected homework problems on the board. Everyone must present at least one problem.

**Course material**:

We will cover the following topics (time permitting)

1. Power Series and Taylor Series
2. Lebesgue Measure and General Measure Theory
3. Measurable Functions and Lebesgue Integration
4. Convergence almost everywhere
5. Metric Spaces
6. additional topics to be determined, e.g. approximation theory, wavelets, Fourier series, dynamic systems, chaos theory, integration in **Rn**, or other topics

If there is a topic related to analysis that you always wanted to learn more about, please let me know. If possible, I will try to add it to the syllabus.