MA 1033 Introduction to Analysis III

Instructor: Darko Volkov
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Stratton Hall 104B

Class time: M, T, R, F, 2:00- 2:50, Stratton Hall 106.
Conference: M, 4:00- 4:50, Stratton Hall 202.

Office hours: M, T, R, F 3:00- 3:50

Peer Learning Assistant:

Christopher M.Teixeira, chrismt@WPI.EDU

Text: "A friendly introduction to Analysis", by W. Kosmala.
Second Edition.

Course Description and Goals:

This course develops the theory of integration and provides an introduction to series of numbers and series of functions. Topics covered include the Fundamental Theorem of Calculus, integration by parts, change of variable, series, convergence tests, rearrangements of series, power series, Taylor series.

This is the third course in the sequence of four that constitutes the Introduction to Analysis series. We will emphasize rigorous derivations of properties and theorems, whenever possible. Students will also work on computational drills in relation to techniques of differentiation and integration. Although the latter may feel trivial as compared to more theoretical aspects of this class, it is essential for Calculus students to acquire solid computational skills.

Occasionally, course material will be presented in a simplified fashion, whereas the textbook develops a more in depth study. For example, Riemann integrals will be defined only for step functions and piecewise continuous functions. The general study of uniform convergence is beyond the scope of this class, however properties of power series will be rigorously derived.

Syllabus:

Week 1: Introduction to Riemann Integration: 6.1, 6.2, 6.3.
Week 2: Riemann integration of continuous functions. Fundamental theorem of calculus. Integration by parts and change of variables. 6.4.
Week 3: Improper integrals: 6.5.
Week 4: Series. Geometric series. Integral test, p- series: 7.1, 7.2.
Mid term.
Week 5: Ratio and root test. Absolute and conditional convergence: 7.3, 7.4.
Week 6: Power series, Taylor series: 8.5, 8.6.
Week 7: Review. Additional topics: may include summation by parts, multiplication of series, irrationality of **e**.
Final.

Homework: Homework is due each Friday. Assignments are posted on the instructor's webpage,
http://users.wpi.edu/~darko/TEACHING/2005_2006/ma1033/frontpage.html
The assistant will be in charge of grading the homework.

Conferences: They will be devoted to going over homework problems and to taking quizzes. Attendance is required.

Grade policy:

Midterm:	30%
Final:	30%
Homework:	20%
Quizzes:	20%

Academic honesty:

As future leaders of our society, WPI students will be held to the highest ethical standards. Hard-working honest students can be assured that I will do my best to preserve the integrity of their good work by being vigilant and promptly and forcefully prosecuting cases of academic dishonesty. Each student should be familiar with the university's Academic Honesty Policy, to be found at http://www.wpi.edu/Pubs/Policies/Honesty/policy.html .

Special Needs:

If you need course adaptations or accommodations because of a disability, or if you have medical information to share with me, please make an appointment with me as soon as possible. My office location and hours are listed at the top of this syllabus. If you have not already done so, students with disabilities, who believe that they may need accommodations in this class, are encouraged to contact the Disability Services Office (DSO), as soon as possible to ensure that such accommodations are implemented in a timely fashion. The DSO is located in Daniels Hall, (508) 831-5235.