MA 1034 Introduction to Analysis IV

Instructor: Darko VOLKOV
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Stratton Hall 104B (my office)

PLA: Joshua KELLER (peer learning assistant)
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Class time: M, T, R, F, 10:00- 10:50, Stratton Hall 203

Office hours: M, 11:00- 11:50
T, 12:00- 12:50
R, 2:00- 2:50
F, by appointment

Text: Thomas's Calculus, Early Transcendentals. 13th edition.
To register on line you will need this information:

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Course ID:  volkov68426
Course Name: darko@wpi.edu_MA1034
Course Materials: Thomas' Calculus: Early Transcendentals
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Course Description and Goals:

The goal of this course is to cover material that is similar to what is taught in MA1024, while approaching it from a more theoretical perspective.
We will cover the following topics in differential calculus: continuity and differentiability for functions of severable variables, gradient vectors, multivariate chain rule, classification of critical points.
We will cover the following topics in integral calculus: double integration over regions in the plane, triple integration over solids in space, cylindrical and spherical coordinates, application to finding the center of mass, general change of variables formula. Time permitting, areas of surfaces "bent" in the third dimension.

Whenever possible we will prove statements, or at least we will try to get a feel for where they are coming from. We will look at examples and counter examples that go beyond those from the textbook. Material corresponding to chapter 14 of the textbook will especially be covered in depth with a concern for mathematical rigor, **so class attendance will be essential!**

Syllabus:

(Note that by a week, we mean a set of four consecutive classes)

Week 1: A fast paced review of basic concepts in geometry. (11.6, 12.1-12.5). Functions of several variables (14.1).
Week 2: Limits, continuity, partial derivatives (14.2-14.3)
Week 3: Multivariable optimization by first derivative test (14.7) Linear approximation, differentials (14.3). Chain rule (14.4).
Week 3: Directional derivatives and the gradient (14.5). Second derivative test (14.7).
Week 4: Double integrals, iterated integrals, double integrals over non rectangular regions (15.1-15.2) Double integrals in polar coordinates (15.4).
Week 5: Applications of double integrals (15.3, 15.6). Triple integrals (15.5). Integration in cylindrical and spherical coordinates (15.7)
Week 6: Change of variables (15.8). Surface area (16.5)
Week 7: Review and final.

Homework: Homework will be due each Wednesday.
Assignments are posted on the instructor's webpage,
http://users.wpi.edu/~darko/TEACHING/2014_2015/1034/frontpage.html
Students are encouraged to work together on their homework assignments, however each student must turn in his own set of complete solutions.
Help with homework can be provided by Math & Science Help (MASH) tutors. Please see
http://www.wpi.edu/Admin/ARC/mash.html

Grade policy:

Midterm: 35%
Final: 35%
Homework: 30%

Academic honesty:

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/.

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. Students with disabilities, who believe that they may need accommodations in this class, are encouraged to contact the Disability Services Office http://www.wpi.edu/Admin/Disabilities/ (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.