Course Syllabus, M517, Fall 2005 – Daniel J. Rudolph

Instructor: Daniel J. Rudolph (Dan), 203 Weber, rudolphd@math.colostate.edu
Office Hours: MW 2-3 or e-mail for an appointment.
Class meetings: MWF 12:10-1:00 in E205 ENGR.

Course Content:
The Real Numbers (Chapt. 1):
Arithmetic
Order
Completeness

Basic Topology (Chapt. 2):
Basic set theory and cardinality
Metric spaces
Compactness

Numerical Sequences and Series (Chapt. 3):
Convergence
Cauchy Sequences
Absolute convergence
Rearrangement of Series

Continuity of Functions (Chapt. 4):

Differentiation (Chapt 5):
Mean Value Theorems
Differentiation in higher dimensions
Frechet Derivatives
Taylor's Theorem

Sequences and Series of Functions (Chapt. 7):
Pointwise and Uniform Convergence
Equicontinuous families and compactness

Functions of Several Variables (Chapt. 9):
The contraction mapping principle
The Inverse Function Theorems
The Implicit Function Theorem

Advanced Topics:
To be determined by our interests and progress.

We will briefly discuss chapter 1, and cover most topics in chapters 2, 3, 4, 5, 7, and 9.

Grading:
Homework will be assigned, collected and graded. You will be allowed to correct your homework and resubmit it one time for a regrade. There will be two midterm exams, the first once we finish chapter 3 and the second after we finish chapter 7. There will be a two hour cumulative final exam on Tuesday, Dec. 13, 7:10-9:10. Your grade will be
based on a 500 point scale, 100 points from homework, 100 points each for the midterms and 200 points on the final.

Course Format:
I will introduce new material in each lecture. Homework will be assigned through the week but all homework from the previous week will be collected on Monday. The two midterm exams are tentatively scheduled for Friday Sept. 30 and Friday Nov. 11. I will try to set aside time at the beginning of each class to answer questions.