Syllabus for Math 415, Spring Semester, 2016
Analysis II

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Office Hours: M 1:10-2:00pm; W 3:10-4:00pm; F 2:10-3:00pm (or by appointment)
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Class Homepage: http://www.public.iastate.edu/~esweber/Math415
Assignments and lecture notes (when available) will be posted here. Additional information relevant to this course, announcements, and scores will be posted on BlackBoard.

Course Description: MATH 415. Analysis II. (3-0) Cr. 3. S. Prereq: MATH 414; and MATH 317 or MATH 407 Sequences and series of functions of a real variable, uniform convergence, power series and Taylor series, Fourier series, topology of n-dimensional space, implicit function theorem, calculus of the plane and 3-dimensional space. Additional topics may include metric spaces or Stieltjes or Lebesgue integration. Nonmajor graduate credit.


Grading: Grade percentages breaks down as follows:

<table>
<thead>
<tr>
<th>Assignment:</th>
<th>Percentage</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midterm Exam 1</td>
<td>20%</td>
<td>Feb. 19</td>
</tr>
<tr>
<td>Midterm Exam 2</td>
<td>20%</td>
<td>Apr. 8</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
<td>May 4</td>
</tr>
<tr>
<td>Exercises</td>
<td>30%</td>
<td>Daily</td>
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</tbody>
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The following overall percentages will assure you of the associated letter grade: 90%: A; 80%: B; 70%: C; 60%: D. There may be a curve at the end of the semester. No individual exams will be curved; do NOT ask!

Exams: The two midterm exams will be in class, and may also have a take home component. They are not comprehensive. The final exam will be comprehensive. There may be a take home component to the final exam.

Exercises: Exercises will be assigned during many (but not all) of the class periods. Exercises are due one week from the date they were assigned. Each assignment is worth 2 points: 1 point for submitting on time and 1 point for correct solution. If the first attempt is unsuccessful, you may attempt the assignment a second time; the second attempt is due two weeks after the assigned date.

Timeline: We will cover (or review) some material from the Basic Analysis text, including integration, uniform convergence, and inverse functions. We will discuss some basic geometry in \( \mathbb{R}^3 \). We will cover as much of chapters 1-4 and 6 in the Differential Geometry text. If time, we will cover some topics not in either textbook.
**Academic Dishonesty:** Academic dishonesty is very serious. Any case of cheating, plagiarism, etc, will be handled as described in the Student Disciplinary Regulations.

**Disability Policy:** Please address any special needs or special accommodations with me at the beginning of the semester or as soon as you become aware of your needs. Those seeking accommodations based on disabilities should obtain a Student Academic Accommodation Request (SAAR) form from the Disability Resources (DR) office (515-294-6624). DR is located on the main floor of the Student Services Building, Room 1076.

**Course Objectives:**
- Understand local geometry of curves and surfaces
- Parameterizations of curves and surfaces
- Understand curvature of curves and surfaces
- Know how to calculate Arc Length, Surface Area
- Understand tangent spaces, tangent bundles
- Know what are differential forms
- Know how to integrate differential forms, calculate pull-backs of differential forms