Syllabus

MTH 320, Section 3: Analysis I

Fall 2011 MWF 1:50 - 2:40 pm C210 Wells Hall

Department of Mathematics
Michigan State University

Instructor: Antonio Cicone
A323 Wells Hall
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cicone@math.msu.edu (the best way to contact me outside my office hours)

Office Hours: MWF 3:00 – 4:00 pm or by appointment.
http://mathdata.msu.edu/CP/RW/S320_003.html


Course Content: The course will cover most of Chapters 1 – 6 of the text. Topics will include properties of the real numbers, limits of sequences and series, limits and continuity, properties of continuous functions, derivatives in one variable, sequences and series of functions, power series and uniform convergence. The idea is to obtain a deep understanding of the theory that underlies the calculus you have already studied, and in the process, to learn how to do rigorous mathematics.

Prerequisites: (MTH 234 or MTH 254H or LB 220) and (MTH 309 or MTH 310).

Attendance: You are expected to attend all class meetings. Any changes in this syllabus, in the schedule of exams etc. will be announced in class. It is student’s responsibility to keep up with the changes. Furthermore during each class meeting I will assign suggested problems and during the following class I will ask randomly – chosen students to present a solution to one of those problems. It is essential to your understanding of what is going on in class that you work hard on them on a day – to – day basis. To do well in this course you should spend six to nine hours of study per week outside of class (2 – 3 hours for each scheduled class hour).

Homework: Homework problems and due dates will be announced during the lecture. Every Homework will be based on the previous weeks’ suggested problems. The homework (and the tests!) will consist largely of proofs, and your grade will depend upon both the correctness and clarity of your argument: proofs should be written in complete sentences, with appropriate use made of mathematical notation (your textbook will serve as a guide to how to do this); proofread what you have done to be sure that it is complete and makes sense; work on making your arguments clear and concise; pay attention to your handwriting (I will grade zero work that I deem illegible). You may discuss any of the problems with others, if you wish, as long as you work alone and use your own wording in writing up the homework to be handed in (see also the policy about academic integrity below). No late homework will be accepted.

Exams: There will be three midterm exams all given during the lecture hour and a final exam (see the important dates section below). All exams are open – booked (i.e. textbook/class notes are allowed during the exam) and all exam problems are similar to the suggested homework problems, they are another way to test your homework effort. Therefore, it is important that you work on all suggested homework problems on time.

Electronic Equipment: The use of calculators as well as cell phones, laptops etc. is not permitted on the midterm and final exams.

Policy on Make – up Exams: Make – up exams will be given only in case of an excused absence (e.g. a documented medical excuse or dire family emergency, religious reasons or a conflicting University activity that cannot be rescheduled). Student athletes should inform me ahead of time of any team travel schedules that conflict with a scheduled exam. Missing a test without a valid excuse will result in a score of 0 for the test. There is no make – up homework, if you do not hand in a homework assignment on the due date it will result in a score of 0 for the assignment.
Help: Help is available from a number of places and people. You are welcome to see me in office hours, by appointment, or ask short questions via email. This semester there will be also available “logic review” sessions through the Math Learning Center (MLC), located in the A – wing lobby of Wells Hall. These sessions are geared to MTH 320 students, and will review basic logic and general proof techniques you should have seen in MTH 309. They will run for just 4 weeks, each topic will be repeated two times. You can attend one or both sessions on a topic. I strongly encourage all of you to attend these sessions.

<table>
<thead>
<tr>
<th>Topic</th>
<th>1st session</th>
<th>2nd session</th>
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<tbody>
<tr>
<td>1. Logic and Direct Proofs</td>
<td>9/1 (Thurs) 3:30 – 5pm C300 Wells</td>
<td>9/7 (Wed) 6 – 7:30pm C300 Wells</td>
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<tr>
<td>2. Proof by contrapositive and common errors regarding the converse</td>
<td>9/8 (Thurs) 3:30 – 5pm C300 Wells</td>
<td>9/14 (Wed) 6 – 7:30pm C300 Wells</td>
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<td>3. Proof by contradiction, the role of counter examples, common errors</td>
<td>9/15 (Thurs) 3:30 – 5pm C300 Wells</td>
<td>9/21 (Wed) 6 – 7:30pm C300 Wells</td>
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<td>4. Proof by Mathematical induction</td>
<td>9/22 (Thurs) 3:30 – 5pm C300 Wells</td>
<td>9/28 (Wed) 6 – 7:30pm C300 Wells</td>
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Finally, you are encouraged to discuss with others. Explaining concepts and techniques to fellow classmates is an excellent way for you to better understand them yourself.

Grading: Your final course grade will be determined by the total point out of 700 points you accumulate from homework (there will be six homework assignments, each will be worth 40 points and the lowest score will be dropped, leaving 200 possible points), three midterm exams (100 points each, total = 300) and the final exam (200 points).

Approximate percentages for the course grade are tentatively set as follows:

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90% – 100%</td>
<td>4.0</td>
</tr>
<tr>
<td>85% – 89%</td>
<td>3.5</td>
</tr>
<tr>
<td>80% – 84%</td>
<td>3.0</td>
</tr>
<tr>
<td>70% – 79%</td>
<td>2.5</td>
</tr>
<tr>
<td>Below 70%</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Borderline Cases: If your percentage is near a border line, it will be handled individually with the consideration of other factors such as attendance, study effort, classroom contributions, performance over time, clarity of homework and exams, etc. Note that your grade could be either up or down by these considerations.

Academic Honesty: The University’s policy concerning academic integrity is covered in the Spartan Life booklet [General Student Regulations](http://www.reg.msu.edu/ROInfo/Calendar/Academic20112012.asp). According to the handbook “no student shall claim or submit the work of another as one’s own”. This applies to all exams and, especially, the collected homework: you must turn in the homework that is your own work. You are on your honor to abide by these regulations. However, you are encouraged to discuss the problems in group with other students before you write down your own work.

Important Dates:

(For details visit [http://www.reg.msu.edu/ROInfo/Calendar/Academic20112012.asp](http://www.reg.msu.edu/ROInfo/Calendar/Academic20112012.asp))

Wednesday – 08/31/2011 – Classes Begin.
Monday – 09/05/2011 – Labor Day – University closed.
Wednesday – 09/07/2011 – Online open add period for fall semester ends at 8pm.
Thursday 09/08/2011 to Wednesday 09/14/2011: Students go to Undergraduate office, A212 Wells Hall for Mathematics enrollment changes (late adds, drop to lower course, section changes).
Wednesday – 09/14/2011 – Last day to late add a course or change sections within a course. Last day to drop to a lower level course.
Monday – 09/26/2011 – End of Full Tuition Refund
**Wednesday – 09/28/2011 – Midterm Exam I**
Wednesday – 10/19/2011 – Middle of Semester. Last day to drop a course without a grade being reported.
**Wednesday – 11/2/2011 – Midterm Exam II**
**Monday – 12/5/2011 – Midterm Exam III**
Friday – 12/09/2011 – Last day of classes.
**Monday – 12/12/2011 – Final Exam (12:45 – 2:45 pm, C210 Wells Hall – classroom).**