MATH 31B - Integration and Infinite Series

Winter 2019

For a detailed course schedule, see page 3 of this document.

Course information

Time and place: MWF 11:00-11:50am, Rolfe Hall 1200.
Instructor: Marco Marengon (marengon@math.ucla.edu).
Office hours (provisional): Thursday and Friday 1:15-2:45 pm, in my office (MS 6617F).
Course webpage: https://ccle.ucla.edu/course/view/17F-MATH31B-1
Topics: Transcendental functions; methods and applications of integration; sequences and series.
Requisite: Course 31A with grade of C- or better. Not open for credit to students with credit for course 3B.

Teaching Assistants

<table>
<thead>
<tr>
<th>Name</th>
<th>Section</th>
<th>Days</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>Samuel Yih</td>
<td>2A</td>
<td>Tuesday</td>
<td>11:00am-11:50am</td>
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<td>2B</td>
<td>Thursday</td>
<td>11:00am-11:50am</td>
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<td>Dominic Yang</td>
<td>2C</td>
<td>Tuesday</td>
<td>11:00am-11:50am</td>
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<td>2D</td>
<td>Thursday</td>
<td>11:00am-11:50am</td>
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<tr>
<td>Matthew Stone</td>
<td>2E</td>
<td>Tuesday</td>
<td>11:00am-11:50am</td>
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<td></td>
<td>2F</td>
<td>Thursday</td>
<td>11:00am-11:50am</td>
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Grading: Your numerical score will be the maximum of the two scores computed using the two following schemes:
• **Scheme 1**: 10% Homework + 5% Highest quiz score + 40% Midterms + 45% Final exam;

• **Scheme 2**: 10% Homework + 10% Quizzes + 20% Higher midterm score + 60% Final exam.

Requests for re-grading homework/quizzes/midterms are to be submitted in written form to me (marengon@math.ucla.edu), with a motivation stating why you believe the grade is incorrect/unfair. Such requests will be considered only within 7 days from the date they are handed back in class.

**Final:**
- **Monday March 18th 2019, 11:30am-2:30pm.**
Exams must be taken during the scheduled times. A grade of ‘F’ will be assigned to any student who misses the final. Incompletes (‘I’ grades) are reserved for those who have completed all of the work for the class, including the midterms, but who, for a legitimate, documented reason, miss the final. If you know that you are going to miss the final for a legitimate reason, you should let me know as soon as convenient.

**Midterms:**
- **Friday February 1st 2019, 11:00am-11:50am** and
- **Friday February 22nd 2019, 11:00am-11:50am.**
As before, there will be NO makeup midterms with the exception of serious medical emergencies or university approved absences. Note that the dual grading scheme however accommodates for one missed quiz or midterm.

**Quizzes:** There will be two surprise quizzes during two discussion sections throughout the term. Each quiz will consist of an exercise from the assigned homework for the previous week, to be solved in 10 minutes.

**Homework:** Homework will be posted each Friday at [http://www.math.ucla.edu/~marengon/w19.31b/homework](http://www.math.ucla.edu/~marengon/w19.31b/homework). The starred exercises in each set of homework assignments are to be turned in on the following Friday just before or just after class. Selected exercises from the set of starred exercises will be graded each week. You can work on the homework problems together, but you should write the solutions on your own, with your own words. When you turn in your homework, please make sure that your name, surname, and UID are written on top of the front page, and that your homework is stapled together. For full credit, please ensure that your homework is clear and legible. The lowest score homework will be dropped when computing the final grade.

Special Needs: Students wanting extra accommodation should contact the Office for Students with Disabilities in Murphy A255, or online at [http://www.osd.ucla.edu](http://www.osd.ucla.edu).

Still have not found the information you are looking for? Try the FAQs at [http://www.math.ucla.edu/~marengon/FAQs.html](http://www.math.ucla.edu/~marengon/FAQs.html).

**Provisional course schedule**

- M 01/07: Introduction + Exponential functions (7.1)
- W 01/09: Derivative of exponential functions (7.1) + Derivative of the inverse (7.2)
- F 01/11: Logarithms and their derivatives (7.3)
- M 01/14: L’Hôpital’s rule (7.7)
- W 01/16: Sequences (11.1)
- F 01/18: Infinite series (11.2)
- M 01/21: No class. Martin Luther King, Jr, holiday.
- W 01/23: Infinite series (11.2)
- F 01/25: Series with positive terms (11.3) except integral test
- M 01/28: Absolute and conditional convergence (11.4)
- W 01/30: Ratio test and root test (11.5)
- F 02/01: Midterm 1 (Examinable material: 7.1, 7.2, 7.3, 7.7, 11.1, 11.2, 11.3, except integral test)
- M 02/04: Power series (11.6)
- W 02/06: Power series (11.6)
- F 02/08: Taylor’s polynomial, Taylor’s theorem (9.4)
- M 02/11: Taylor’s bound (9.4)
- W 02/13: Taylor series (11.7)
- F 02/15: Taylor series (11.7)
- M 02/18: Inverse trigonometric functions (7.8)
- W 02/20: Hyperbolic functions (7.9, except sections “Einstein’s law of velocity addition” and “Excursion: A leap of imagination”)
- F 02/22: **Midterm 2** (Examinable material: sections 11.4, 11.5, 11.6, 9.4, 11.7)
- M 02/25: Integration by parts (8.1) + Proof of Taylor’s theorem (9.4) + Integral of logarithms
- W 02/27: Trigonometric integrals and trigonometric substitution (8.2-8.3)
- F 03/01: Methods of partial fractions (8.5)
- M 03/04: Numerical integration, error bounds (8.9)
- W 03/06: Numerical integration, error bounds (8.9), arc length (9.1)
- F 03/08: Surface area (9.1)
- M 03/11: Improper integrals (8.7)
- W 03/13: Improper integrals (8.7), integral test (11.3)
- F 03/15: Integral test (11.3)
- M 03/18, 11:30 am - 2:30 pm: **Final**. Examinable material: all topics covered in the course, with an emphasis on the last part of the course.