MA424.01 Spring 2013: Complex Analysis Syllabus

1:00 MWF: 004 KH

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Class webpage: [http://evergreen.loyola.edu/loberbroeckling/www/ma424/index.html](http://evergreen.loyola.edu/loberbroeckling/www/ma424/index.html)

Other information found on Moodle.

Office Hours

<table>
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<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
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<td>2-3:30</td>
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Also by appointment (see my schedule).

I reserve the right to make changes to the syllabus at any time during the term by announcing them in class and on the webpage. You are responsible for knowing what was discussed/announced in class but also posted on Moodle/class website.

Prerequisites: MA421 or written permission of the instructor.

Course Description: Geometry of complex numbers, complex functions, analytic functions, harmonic functions, contour integration, Cauchy’s Integral Formula, Laurent series, residue theory, conformal mappings.

Text: Required: *Complex Variables and Applications*, 8th edition by James Ward Brown and Ruel V. Churchill. There is a student solutions manual that you may find useful, but is not required.

Grading:

Based on: Homework 40%  
3 Exams 15%, 20%, & 25%
2 in-class and final.
Highest exam is worth 25%,
lowest worth 15%.

Basic Scale

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<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90-100%</td>
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<tr>
<td>B</td>
<td>80-89%</td>
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<tr>
<td>C</td>
<td>70-79%</td>
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<tr>
<td>D</td>
<td>60-60%</td>
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<tr>
<td>F</td>
<td>0-59%</td>
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I give +/- grades, the cutoffs being at the 7's and 3's, respectively.

Thus 80-82.9 = B-, 83-86.9 = B, and 87-89.9 = B+.

Homework: This course will emphasize problem solving and writing; thus homework is the most important aspect of the course. You must show all of your work clearly – NO WORK = NO CREDIT. Assignments will consist of exercises from the book and any additional exercises or computer problems that are assigned. These will be posted on Moodle. They will be collected every week unless told otherwise (which exact sections are due that week will be announced the class period before). Of the set of problems turned in on an assignment, I will choose a handful to correct and give feedback. The homework will be time consuming so do not procrastinate. The lowest homework score will be dropped in calculating your final grade.

Exams: There will be 2 in-class exams during the term. They are tentatively scheduled on Monday, February 18 and Wednesday, March 27. Other information about the exams will be announced in class as each exam approaches.
Final Exam: Friday, May 3 at 1 PM.

Extra Credit: Do not count on extra credit in this course to boost your grade. I make it a policy to not give extra credit on an individual basis so do not ask for it, especially at the end of the semester.

Attendance Policy: I do not take attendance every day, but I do pay attention to who shows up. If you must miss class, I don’t need to hear why because it is your responsibility to find out what you missed. It is best to get notes from a classmate; my lecture notes will not be useful to you. If you cannot make it to an exam because of illness or family emergency, let me know in advance by phone or e-mail. Make-ups will be given only under these circumstances. Don’t abuse this. No changes can be made to the date and time of the final exam.

Classroom Etiquette: When you come to class, I expect you to not only be in attendance physically but also mentally. That means no cell phones, no leaving class during lecture, no extraneous chatter, etc. If you know you must leave class, sit by the door to minimize the disruption.

If you miss class, it is your responsibility to find out what you missed. It is best to get notes from a classmate; my lecture notes will not be useful to you. If you cannot make it to a quiz or exam because of illness or family emergency, let me know in advance by phone or e-mail. Make-ups will be given only under these circumstances. Don’t abuse this. No changes can be made to the date and time of the final exam.

Honor Code: All students of the University are expected to understand the meaning of the [Loyola University Honor Code](https://www.loyola.edu/honorcode). Ignorance of the Code is not a valid reason for committing an act of academic dishonesty. The following constitute violations of the Code and are defined in the Community Standards Handbook: cheating, stealing, lying, forgery, plagiarism and the failure to report a violation.

As it pertains to this course: I expect and encourage you to work with others on homework (by collaborating, not copying!). However, you must write and understand the work that you turn in and you may not share written solutions before they are turned in. If you learn how to solve a problem by talking to a classmate, looking it up in a book or on the internet, you should cite the source in your homework write-up, as you would for a literature paper. I will ask you to sign a pledge on exams but not on all assignments although I will expect the same honesty on all of them. Any questions or concerns should be directed immediately to me.

Student Athletes: If you are a student athlete, please provide me with your travel and game schedule indicating when you will need to miss class to participate in athletic events. While travel for athletics is an excused absence, you will need to make up any missed work. Absences only on the travel letter will be accommodated.

Disabilities: If you have a disability that is documented with the Disability Support Services Office (DSS) and wish to discuss academic accommodations, please contact me as soon as possible. If you have a learning disability that has not been documented, you may contact the Disability Support Services Office (410-617-2602) for assistance.
Learning Outcomes: At the end of the term, if a student successfully completes the course, s/he will have achieved:

the following Undergraduate Learning Aims of the University:

- Intellectual Excellence
  - appreciation of and passion for intellectual endeavor and the life of the mind
  - appreciation of and grounding in the liberal arts and sciences
  - excellence in a discipline, including understanding of the relationship between one’s discipline and other disciplines; understanding the interconnectedness of all knowledge
  - habits of intellectual curiosity, honesty, humility, and persistence

- Critical Understanding: Thinking, Reading, and Analyzing
  - the ability to evaluate a claim based on documentation, plausibility, and logical coherence
  - the ability to analyze and solve problems using appropriate tools
  - the ability to use mathematical concepts and procedures competently, and to evaluate claims made in numeric terms
  - the ability to use information technology in research and problem solving, with an appreciation of its advantages and limitations

- Eloquentia Perfecta: the ability to use speech and writing effectively, logically, gracefully, persuasively, and responsibly

- Diversity: recognition of the inherent value and dignity of each person, and therefore an awareness of, sensitivity toward, and respect for the differences of race, gender, ethnicity, national origin, culture, sexual orientation, religion, age, and disabilities

the following Natural and Mathematical Sciences learning aims:

- develop their innate curiosity about the natural world and take a life-long interest in science news and advancements

- explore one or more of the central ideas that form the foundation for modern science

- understand the process of science - its methodology, how questions are framed, how data are acquired, how arguments are constructed and conclusions reached. In this context, students should learn what science is not and have the ability to recognize and reject pseudoscientific claims. In addition, students should also have the ability to recognize the limits of science. Students also should understand the relationship between science and technology and how the results of scientific discovery can be applied to the needs of society. Students should learn the linkage between experimental methodology and scientific content

- learn to reason mathematically, and to think critically and analytically through statistical or mathematical methods. Because of the close interrelationship between science and math, in each science course in the core, students will achieve a better understanding of the power of quantitative tools used in the particular discipline

- learn how recent technological advances have facilitated and accelerated scientific inquiry. They gain a realistic understanding of the potential and limitations of computation and the learning goals of the course topics (topics listed in the catalog description).