SYLLABUS OF MATH-185 COMPLEX ANALYSIS
FALL 2018 SECTION 6

Basic Information

Instructor:  Semeon Artamonov  artamonov@berkeley.edu

Lectures:  Tuesday&Thursday 11:00AM-12:30PM at Dwinelle 182


Office hours:  Wednesday 10:00AM–11:00AM, Thursday 1:00–3:00 PM at 1055 Evans Hall

Course website:  https://math.berkeley.edu/~art/F18-Math-185.html

Math-185 GSI (Aug. 22–Aug. 31):  Nick Ryder 12–2PM MWF & 3:30PM–5:30PM TuTh in Evans 961
Math-185 GSI (From Sep. 1):  Benjamin Filippenko 3:00PM–5:00PM in Evans 961 (everyday)

Homework

Homework assignments will be given on Thursdays and normally will be due by the beginning of the class on the following Thursday (except for homework assigned on Nov. 15 which will be due on Nov. 27). A random subset of problems from each assignment will be graded and the average homework grade will contribute to the total grade. For each student I will drop the two lowest homework grades from taking the average at the end of the semester.

Late homework assignments will not be accepted. If you have to miss a class you should do one of the following:

• Submit homework on Tuesday of the week when it is due.
• Submit homework in person or slip it under the door in Evans 1055 before 5PM on the due date.
• In case none of the above is possible, e-mail eligible scanned version of the homework by 5PM on the due date.

Exams

Midterm I:  Tuesday, September 18 (in class)
Midterm II:  Thursday, October 25 (in class)
Final Exam:  Wednesday, Dec. 12 at 8:00AM (to be confirmed in November)

Missing the final exam generally implies failing the course. Please double check
https://registrar.berkeley.edu/scheduling/academic-scheduling/final-exam-guide-schedules to make sure that you have no final exam conflicts, back-to-back exams etc., and switch sections if necessary. It is entirely your responsibility to organize your schedule in such a way that you will have enough time between the exams.

In case of an emergency during the exam (e.g. fire alarm, earthquake), leave your exams facing down on the table and follow the emergency instructions. You are not allowed to take the exam materials with you when evacuating.
Grades

The contribution to the total grade: Homework — 15%, Midterms — 20% each, Final Exam — 45%. In order to pass the course you need to have to the total score 60% or higher. Missing final exam implies failing the course or, in some cases, receiving an "I" (incomplete grade). The cutoffs between the passing letter grades will be determined using historical averages as a guideline.

If you have a proper reason to miss a midterm, please e-mail me at least one week before the exam, and your grade will be rescaled with no penalties. Otherwise, your grade will be calculated as follows:
If you missed one midterm: Homework — 20%, Midterm — 25%, Final Exam — 50% (the total is 95%)
If you missed two midterms: Homework — 25%, Final Exam — 55% (the total is 80%)

Reading Schedule

Outside reading is an essential part of the course, below you can find a list of reading assignments for each week. It is crucially important to read the following sections of the textbook within a week after each lecture.

- Thu, Aug. 23 Complex Numbers and Polar Representation Ch. I, Sec. 1-2
- Tue, Aug. 28 Stereographic projection, Exp and Log Ch. I, Sec. 3.5,6
- Thu, Aug. 30 Limits, Continuity, and Analytic Functions Ch. II, Sec.1-2
- Tue, Sep. 4 Complex Derivatives and Cauchy-Riemann Equations Ch. II, Sec. 2-3
- Thu, Sep. 6 Inverse Mappings and Jacobian Ch. II, Sec. 4
- Tue, Sep. 11 Harmonic Functions and Conformal Mappings Ch. II, Sec. 5-6
- Thu, Sep. 13 Fractional Linear Transformations Ch. II, Sec. 7
- Tue, Sep. 18 Midterm I
- Thu, Sep. 20 Line Integrals and Green’s Theorem Ch. III, Sec. 1-2
- Tue, Sep. 25 Conjugates, Mean Value Property, Maximum Principle Ch. III, Sec. 3-5
- Thu, Sep. 27 Complex Line Integrals and Fundamental Theorem of Calculus Ch. IV, Sec. 1-2
- Tue, Oct. 2 Cauchy’s Theorem and Cauchy’s Integral Formula Ch. IV, Sec. 3-4
- Thu, Oct. 4 Liouville’s Theorem and Morera’s Theorem Ch. IV, Sec. 5-6
- Tue, Oct. 9 Complex Series and Sequences, Series of Complex Functions Ch. V, Sec. 1-2
- Thu, Oct. 11 Power Series and Power Series Expansions of Analytic Functions Ch. V, Sec. 3-4
- Tue, Oct. 16 Power Series Expansions (continued) Ch. V, Sec. 4-5
- Thu, Oct. 18 Manipulation of Power Series and Zeros of an Analytic Function Ch. V, Sec. 6-7
- Tue, Oct. 23 Laurent Series and Isolated Singularities Ch. VI, Sec. 1-2
- Thu, Oct. 25 Midterm II
- Tue, Oct. 30 Isolated Singularities (continued) Ch. VI, Sec. 2-3
- Thu, Nov. 1 Partial Fractions Decomposition Ch. VI, Sec. 4
- Tue, Nov. 6 The Residue Theorem, Integrals of Rational Functions Ch. VII, Sec. 1-2
- Th, Nov. 8 Integrals of Trigonometric Functions, Integrals with Branch Points Ch. VII, Sec. 3-4
- Tue, Nov. 13 The Argument Principle Ch. VIII, Sec. 1
- Th, Nov. 15 Rouche’s Theorem and Hurwitz’s Theorem Ch. VIII, Sec. 2-3
- Tue, Nov. 20 Open Mapping and Inverse Function Theorem Ch. VIII, Sec. 4
- Th, Nov. 22 No class, Happy Thanksgiving!
- Tue, Nov. 27 Critical Points and Winding Numbers Ch. VIII, Sec. 5-6
- Th, Nov. 29 Simply Connected Domains and Miscellaneous Ch. VIII, Sec. 8