Course Syllabus

Course: Mathematics 8051.

Course Title: Functions of a Complex Variable.

Time: TR 2:30–3:50.

Place: Wachman 527.

Instructor: Mendoza, Gerardo A.

Instructor Office: Wachman Hall 618.

Instructor Email: gmendoza, temple.edu

Instructor Phone: 1-5053.

Course Web Page: http://www.math.temple.edu/∼gmendoza.

Office Hours: By appointment, but if you come and I have time, I'll see you.

Prerequisites: Permission of instructor.

Textbook: John B. Conway, Functions of One Complex Variable I, Graduate Texts in Mathematics, Vol. 11. 2nd ed. 1978. Corr. 7th printing, 1995, Hardcover, ISBN: 978-0-387-90328-6.

Course Goals: This is a two semester course. In addition to gaining a deep working understanding of the subject, the student is expected to be able to write clear complete proofs in the subject.

Topics Covered: For the two-semester sequence: Elementary properties and examples of holomorphic functions; differentiability and analyticity, the Cauchy-Riemann equations; power series; conformality; complex line integrals, the Cauchy Integral Formula and Cauchy's Theorem; applications of the Cauchy Integral Formula-power series expansion for a holomorphic function, the Maximum Modulus principle, the Cauchy estimates, Liouville's Theorem; Singularities of holomorphic functions, Laurent expansions, the calculus of residues and applications to the calculation of definite integrals and sums; zeros of a holomorphic function, the Argument Principle, Rouche's Theorem, Hurwitz's Theorem; conformal mappings. Topics for the second semester include Harmonic functions, the Poisson integral formula, maximum and minimum principles, the mean value property, the Dirichlet problem, Harnack's inequality; spaces of holomorphic and meromorphic functions, the Riemann Mapping Theorem; analytic continuation. Weierstrass and Hadamard's Factorization Theorems; Picard's Theorems; introduction to Riemann Surfaces.

Course Grading: Homework will be given frequently. The final grade will be based on the homework, the tests and a final examination.

Exam Dates: Tentative dates for partial exams: September 20 and November 6. Final exam date to be determined.

Attendance Policy: Attendance is required. Missing four classes implies a failing grade.

Any student who has a need for accommodation based on the impact of a disability should contact me privately to discuss the specific situation as soon as possible. Contact Disability Resources and Services at (215) 204-1280, 100 Ritter Annex, to coordinate reasonable accommodations for students with documented disabilities.

Freedom to teach and freedom to learn are inseparable facets of academic freedom. The University has adopted a policy on Student and Faculty Academic Rights and Responsibilities (Policy # 03.70.02).

Students will be charged for a course unless dropped by the Drop/Add deadline date. Check the University calendar for exact dates.

During the Drop/Add period, students may drop a course with no record of the class appearing on their transcript. Students are not financially responsible for any courses dropped during this period. In the following weeks prior to or on the withdrawal date students may withdraw from a course with the grade of "W" appearing on their transcript. After the withdrawal date students may not withdraw from courses (Policy # 02.10.14).

The grade "I" (an "incomplete") is only given if students cannot complete the course work due to circumstances beyond their control. It is necessary for the student to have completed the majority of the course work with a passing average and to sign an incomplete contract which clearly states what is left for the student to do and the deadline by which the work must be completed. The incomplete contract must also include a default grade that will be used in case the "I" grade is not resolved by the agreed deadline (policy # 02.10.13).