SYLLABUS FOR MA 412, SUMMER 2018

Professor:	Maciej Szczesny
Office:	MCS 273
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Office Hours:	MTWTh 12-1
Lecture:	COM 213, MTWTh 9-11

Text: Complex Variables and Applications, Brown & Churchill (9th Ed.), McGraw-Hill.

Homework: Homework will be assigned every day. You will be asked to hand in a subset of the problems at the end of the week. Late homework will not be accepted. However, your lowest homework grade will be dropped.

Quizzes: There will be a quiz every other day. The problems will closely follow those in the homework. No make-up quizzes will be given. However, your lowest Quiz grade will be dropped.

Important Dates: The last day to drop the course without a "W" is July 10, and with a "W", July 26. July 10 is also the deadline for tuition reimbursements.

Exams: There will be two in-class exams and a final exam at the end. The dates are as follows:

Exam I	Tuesday, July 17
Exam II	Tuesday, July 31
Final Exam:	Thursday, August 9

Note: No calculators, books, notes, or cellphones are allowed during exams/quizzes.

No make up exams will be given, with the exception of serious illness, in which case you will be required to provide a note from a physician.

Grading Policy:

Homework:	10 %
Quizzes:	20 %
In-class Exam I:	20 %
In-class Exam II:	20 %
Final:	30 %

The minimum final grades based on the above breakdown are guaranteed to be as follows: **A** 90-100 %, **B** 80-89, **C** 70-79, **D** 60-69.

Academic Honest: You are encouraged to discuss homework problems with other students. However, your write-ups should ALWAYS be your own. If you are caught plagiarizing, you will be referred to the University Academic Standards Committee for disciplinary action.

Standards of Civilized Behavior: Lecture is a time devoted to learning. Activities which interfere with this process will not be tolerated. For this reason, laptops are not allowed in class. Please turn off your cell-phone before coming to class.

Material to be covered: Chapters 1-7 of the textbook, namely:

(1) Complex numbers - exponential form, roots, geometric properties
(2) Analytic functions - limits, derivatives, the Cauchy-Riemann equations, harmonic functions, analyticity. Mapping of regions under analytic functions.
(3) Elementary functions - $\sin(z), \cos(z), \exp(z), \log(z), z^\alpha$ etc. as analytic functions, branch cuts.
(4) Integrals - contour integrals, estimates on size, Cauchy-Goursat Theorem, Cauchy integral formula, topology of regions, Liouville's theorem fundamental theorem of algebra, maximum modulus principle
(5) Series - Taylor and Laurent series, convergence properties, differentiation and integration of series, multiplication and division of series,
(6) Residues and poles - types of singular points, Cauchy Residue Theorem, meromorphic functions, behavior near a singular point.
(7) Applications of residues - improper integrals, Jordan's lemma, integration along branch cuts, argument principle, Rouche's theorem.