MATH 423, Complex Analysis, Spring, 2006

INSTRUCTOR: Dr. Kenneth L. Wiggins, Office: 338 KRH, Office Hours: 3 M; 2 Tu,W,Th; 11 F, Other office hours by appointment, Phone: (509) 527-2088, E-mail: wiggke@wwc.edu

BULLETIN DESCRIPTION: Study of functions of a complex variable, the geometry of elementary functions, integration, power series, calculus of residues, and conformal mapping. Prerequisite: MATH 283. Offered odd years only.

OBJECTIVES: It is expected that, after finishing this course, the student will understand the basic ideas of complex analysis including analytic functions, infinite series, and residue theory.

TEXT: *Complex Analysis for Mathematics and Engineering*, 5th edition, by Mathews and Howell, Jones and Bartlett, 2006

Assessment: All assessment will be based on both the correctness and quality of your work, including the quality of your presentation.

Assessment Category	Weights
Homework & quizzes	15%
Three tests	50%
Final examination	35%

Grade	Percent	Grade	Percent	Grade	Percent	Grade	Percent
A	91-100%	B	83-85%	C	70-74%	D	58-61%
A-	89-90%	B-	80-82%	C-	65-69%	D-	55-57%
B+	86-88%	C+	75-79%	D+	62-64%	F	0-54%

HOMEWORK: Homework will be collected regularly. Papers will be due at the beginning of class the day after they are assigned. However, they may be turned in the following day with a 10% penalty. Papers more than one day late will not be accepted.

TESTS: Three 50-minute tests will be given.

FINAL EXAMINATION: This test is scheduled for Wednesday, June 7, at 8 AM. Attendance is required, so make your travel plans early with this appointment in mind.

DISABILITIES: If you have a physical and/or learning disability and require accommodations, please contact your instructor or the Special Services office at 527-2090.
This syllabus is available in alternative print formats upon request. Please ask your instructor.

TENTATIVE SCHEDULE:

Week	Topic	Assignment
1	Complex numbers	1.1 #3a 1.2 #1afh, 4 (1-13,1-14, 1-15 only),6ab 1.3 #1c, 2a, 6d, 8 1.4 #1d, 2a, 3f, 5f, 7, 9 1.5 #1c, 5d, 15
2	Topology Functions and mappings $W = z^n$ and $W = z^{1/n}$	1.6 #1d, 2a, 5, 9 (i, ii, iii, iv, vii only – be brief, formal proofs not required), 10 2.1 #1a, 4a, 6b, 7c, 12a 2.2 #1abf, 5, 9
3	Limits and Continuity Branches of functions Differentiable functions Cauchy-Riemann equations	2.3 #1ce, 2ab, 5a, 7, 9, 17 2.4 #1a, 6, 9a 3.1 #1bc, 3bdf, 7a, 8 3.2 #1abc, 3, 7a, 9a, 14
4	Harmonic Functions Sequences and Series	3.3 #1ab, 5b, 10 4.1 #1ac, 2, 10, 11, 12, 17
5	Geometric Series Power Series Exponential function Logarithmic function	4.3 # 1a, 3 4.4 #3dg, 4, 5, 6, 8, 12 5.1 #1, 4b, 5b, 9b, 14a, 17 5.2 #1b, 2a, 3a, 5a, 10a
6	Complex exponents Trigonometry & hyperbolic functions	5.3 #2d (indicate principal value), 3, 7, 8 5.4 #5b, 6a, 8ab, 9a, 11, 16f
7	Complex integrals Contour integrals	6.1 #1a, 2, 3 6.2 #1a, 2a, 5, 8, 9a, 18
8	The Cauchy-Gorsat Theorem Fundamental Theorems of Integration Cauchy Integral Formula Theorems of Morera and Liouville	6.3 #1bd, 3, 4, 10, 11 6.4 #9, 11, 13, 15, 19 6.5 #5, 9, 17, 19 6.6 #2, 4a, 7a, 10
9	Uniform convergence Taylor series Laurent series TEST #2	7.1 #9 7.2 #1c, 3a, 7a, 15, 17 7.3 #3, 5, 8, 9, 12
10	Singularities (quick coverage without proofs) The Residue Theorem Trigonometric Integrals (if time permits)	7.4 #2b, 3a 8.1 #1d, 3c, 9c 8.2 #5