

**Course Number/Title:** Math 128 (Complex Analysis)  
**Course Credit:** 3 units  
**Prerequisites:** Math 123.1 and Math 109

**Textbook / References:**

1. J.W. Brown and R. Churchill. *Complex Variables and Applications (6<sup>th</sup> ed)*. McGraw-Hill Int'l. 1996.
2. L. Pennisi. *Elements of Complex Variables*. New York: Holt, Rinehart and Winston. 1976.
3. J. Conway. *Functions of One Complex Variable*. Springer-Verlag, 1978.
4. L. Ahlfors. *Complex Analysis*. McGraw-Hill, 1966.

**Course Requirements:**

Two-thirds of the final grade will be based on 3 exams, possible problem sets, boardworks and assignments (TBS). All these requirements are equally weighted and thus it is expected that students perform well in all these. The remaining one-third of the final grade will be based on the final examination.

**Grading System:**

1.00	93-100	2.50	70-74
1.25	90-92	2.75	65-69
1.50	87-89	3.00	60-64
1.75	84-86	4.00	55-59
2.00	80-83	5.00	Below 55
2.25	75-79	P/F	For Non Degree

**Course Policy:**

**Attendance:**

I check attendance. As per university rule, a student must not absent him/herself more than 20% of the total number of classes for the term. If most of his/her absences are excused, then the student must officially drop the course. Otherwise, if most of his/her absences are not excused then he/she will be given a grade of 5.0. Perfect attendance does not merit extra points in your grade.

It is important that students submit their excuse slip/letter (if applicable) as soon as possible after being absent. Failure to do this is a sign of irresponsibility.

**Grades of 4 and Inc:**

A student who gets a grade of 4.0 may take a removal exam within 3 regular removal periods or retake the course. A student who gets a grade of Inc. should complete all requirements within one academic year after receipt of grade. Retaking the course does not complete the course. In both cases, the student should inform the teacher as soon as possible regarding their mode of removal/completion.

**Dropping:**

A student is officially dropped from the course if he/she files a dropping slip and returns a slip to the teacher. A student who stops attending classes and/or taking exams without officially dropping will be given a grade of 5.0. Note that the teacher has the right not to sign your dropping slip.

**Missed Examinations:**

A student who misses an examination should immediately inform me personally. Depending the merits of the situation, a make-up exam may be given or the final grade will be used for that particular exam.

**Cheating:**

Cheating during examinations or problem sets is definitely not tolerated. Students caught cheating will automatically get a grade of 5.0 for the course, and the teacher may opt to file disciplinary charges against the student(s).

**Proper Decorum:**

It is expected that full attention to the teacher be given during class. Mobile phones and beepers should be turned off or kept in silent mode. Any activity, such as note passing, giggling, or private conversations, that will distract the teacher should be avoided.

**Consultations:**

If you have any questions regarding lessons discussed, feel free to visit me during my consultation hours. However, if you are not available during my designated consultation hours, we may arrange for another time schedule.

**Mentor:**

Jose Maria L. Escaner IV, Ph.D. (Associate Professor)  
MB 213. Website: <http://www.jlescaner.tk>

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**Schedule of Classes**

Meeting	Date	Topic
1	11/12/2008	Basics of Complex Numbers, Polar Coordinates and Euler Form
2	11/14/2008	Product, Quotient and Roots of Complex Numbers; Regions in the Complex Plane
3	11/19/2008	Functions of a Complex Numbers and Mappings; Limits
4	11/21/2008	Theorems on Limits, Limits involving the point at infinity
5	11/26/2008	Continuity; Derivatives; Differentiation Formulas
6	11/28/2008	Cauchy-Riemann Equations, Sufficient Conditions for Differentiability
7	12/03/2008	Polar Coordinates, Analytic Functions
8	12/05/2008	Reflection Principle and Harmonic Functions
9	12/10/2008	Summary
10	12/12/2008	Boardwork
11	<b>12/16/2008</b>	<b>First Examination</b>
12	01/07/2009	Exponential Functions, Trigonometric Functions and Hyperbolic Functions
13	01/09/2009	Logarithmic Functions and its Branches, Identities involving logarithms
14	01/14/2009	Complex Exponents, Inverse Trigonometric and Hyperbolic Functions
15	01/16/2009	Complex-valued Functions, Contours, Countour Integrals
16	01/21/2009	Antiderivatives; Exercises
17	01/23/2009	Cauchy-Goursat Theorem, Simple and Multiply-connected Domains
18	01/28/2009	Cauchy Integral Formula; Derivatives of Analytic Functions
19	01/30/2009	Liouville's Theorem, Fundamental Thm of Algebra; Maximum Moduli of Functions
20	02/04/2009	Summary
21	02/06/2009	Boardwork
22	<b>02/11/2009</b>	<b>Second Examination</b>
23	02/13/2009	Convergence of Sequence and Series; Taylor Series
24	02/18/2009	Laurent Series; Absolute and Uniform Convergence of Power Series
25	02/20/2009	Integration and Differentiation of Power Series; Uniqueness of Series Representation
26	02/25/2009	Multiplication and Division of Power Series; Analytic Continuation
27	02/27/2009	Residues; Residue Theorems; Three Types of Isolated Singular Points
28	03/04/2009	Residues at Poles; Zeros and Poles of Order $m$ ;
29	03/06/2009	Conditions under which $f(z)=0$ ; Behavior of $f$ near removable and essential singular points
30	03/11/2009	Evaluation of Improper Integrals (incl involving sines and cosines)
31	03/13/2009	Definite Integrals involving sines and cosines; indented paths; integration along a branch cut
32	03/18/2009	Argument Principle and Rouché's Theorem; Inverse Laplace Theorems
33	03/20/2009	Boardwork
34	<b>03/25/2009</b>	<b>Third Examination</b>