

King Fahd University of Petroleum & Minerals
Department of Mathematical Sciences

SYLLABUS

MATH-533: Complex Variables I
Spring Semester 2004 (032)

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Course Website: <http://faculty.kfupm.edu.sa/math/abuhlail/Math-533.htm>

Goal: The course is intended to provide the first year graduate students with rigorous theory about the fundamental topics on complex analysis. The emphasis is on analytic functions, complex integration, expansion theory and conformal mappings.

Textbook: L.V. Ahlfors, *Complex Analysis : An Introduction to the Theory of Analytic Functions of One Complex Variable*, New York : McGraw-Hill (3rd. edition).

Further References:

- W. Rudin, *Real and complex analysis*, New York : McGraw-Hill.
- S. Lang, *Complex Analysis*, Springer-Verlag (3rd. edition).
- J. Conway, *Functions of one complex variable*, Berlin : Springer-Verlag.

Topics to be Covered: Analytic functions; Cauchy's theorem and consequences; Singularities and expansion theorems; Maximum modulus principle; Residue theorem and its application; Compactness and convergence in space of analytic and meromorphic functions; Elementary conformal mappings.

Course Plan:

Week	Chapter/ Section	Topic
1	Chapter 1	Complex Numbers
2-3	Chapter 2	Complex Functions
4-6	Chapter 3	Analytic Functions as Mappings
7-9	Chapter 4	Complex Integration
10-12	Chapter 5 (sections:1,2,3,5)	Series and Product Development
13-15	Chapter 6 (sections: 1-4)	Conformal Mappings

Grading Policy:

- Assignments, Projects & Presentations: **20 %**
- Two Major Exams: **40 %**
- Final Exam: **40 %**