THE UNIVERSITY   **OF HONG KONG**

Institute of Mathematical Research
Department of Mathematics

Lectures on
Complex Manifolds

Professor Ngaiming Mok
The University of Hong Kong

We will give an introduction on basic notions on complex manifolds both on the algebraic and on the analytic sides. This will include sheaves, Cech cohomology, de Rham and Dolbeault cohomologies, Hermitian and Kähler manifolds, Hermitian holomorphic vector bundles, harmonic forms and vanishing theorems, and infinitesimal deformation of complex structures. As topics we will discuss Hermitian symmetric manifolds of the noncompact type. Especially, we will discuss some rigidity problems on compact quotients of bounded symmetric domains by torsion-free lattices of automorphisms, and examples of characterization of totally geodesic holomorphic cycles on them.

There will be a total of 12 lectures of 90 minutes each. The series of lectures is also offered as the graduate course MATH6202.

References:

[GH] Griffiths, P. & Harris, J. *Principles of Algebraic Geometry*, Pure and Applied Mathemtics, Wiley-Interscience Publishers, New York 1978.
[K] Kodaira, K. C*omplex Manifolds and Deformation of Complex Structures*, Grundlehren der mathematischen Wissenschaften 283, Springer-Verlag, Berlin-Heidelberg 1986.
[M] Mok, N. *Metric Rigidity Theorems on Hermitian Locally Symmetric Manifolds*, World Scientific, Singapore-New Jersey 1989.

Lecture 1:	February 3, 2004	(Tuesday)	4:00 – 6 :00pm
Lecture 2:	February 10, 2004	(Tuesday)	4:00 – 6 :00pm
Lecture 3:	February 17, 2004	(Tuesday)	4:00 – 6 :00pm
Lecture 4:	February 24, 2004	(Tuesday)	4:00 – 6 :00pm
Lecture 5:	March 2, 2004	(Tuesday)	4:00 – 6 :00pm
Lecture 6:	March 9, 2004	(Tuesday)	4:00 – 6 :00pm
Lecture 7:	March 23, 2004	(Tuesday)	4:00 – 6 :00pm
Lecture 8:	March 30, 2004	(Tuesday)	4:00 – 6 :00pm
Lecture 9:	April 6, 2004	(Tuesday)	4:00 – 6 :00pm
Lecture 10:	April 13, 2004	(Tuesday)	4:00 – 6 :00pm
Lecture 11:	April 20, 2004	(Tuesday)	4:00 – 6 :00pm
Lecture 12:	April 27, 2004	(Tuesday)	4:00 – 6 :00pm

Lectures will be held in Room 517, Meng Wah Complex

All are welcome