Advanced Surface II (221U4330)

Instructor: Jungkai A. Chen
Office: Old Math. Bldg 108
Office Hour: by appointment.
TEL: 23633860-131
Email: jkchen@math.ntu.edu.tw
Wed. 10:20-11:35, Fri. 13:55-15:10

First meeting: Feb 18, 2004 (Wed.)

Course outline:

1. Elliptic Fibration
     Kodiara's table of singular fibers.
     Classification of elliptic surface..
     Logrithmic transformation.
2. Surfaces singularities
     DuVal singularities.
     Elliptic singularites.
     Canonical and terminal singularites.
     Quotient singularities
3. Surfaces of general type
     Miyaoka-Yau inequality.
     Some more inequalities.
     Pluricanonical maps
     Geography of Chern numbers
     Surfaces with   =1.
     Moduli spaces
4. Abelian surfaces
     Cohomology of line bundles.
     Projective embedding.
     Endomorphisms.
     Moduli spaces.
5. K3-Surfaces and Enriques surfaces
     Divisors on K3-surface
     Local Torelli theorem for K3-surface
     Moduli spaces of vector bundle on K3-surface.

Divisors on Enriques surface.

The period map and period domain

Reference:

1. Barth, Peters, Van de Ven, *Compact Complex Surface.*
2. Kodaira , *On the structure of compact complex analytic surface I,II,III.*
3. Hartshorne, *Algebraic Geometry, GTM 52.*
4. Griffiths, Harris, *Principle of Algebraic Geoemtry*
5. Lange, Birkenhake, *Complex Abelian Varieties*

Grading:

1. Homework/Attendence   40%
2. Term Paper   60%