Course Description

Department of Mathematics

Nature of the course: Elective		Area: 幾何與拓樸, 論文研討			
Course number		Section number		Number of credits	3
Course title	代數幾何專題 Topics in Algebraic Geometry				
Instructor	余正道				

I. ＊**Contents**：

Frobenius structure, constructions from Gromov-Witten theory, from deformation of singularities, comparison of Frobenius structures, relations with other structures

II. **Course prerequisite**：

III. ＊**Reference material**：

Sabbah, Isomonodromic deformations and Frobenius manifolds. 2007.

IV. ＊**Grading scheme**：

Homework and oral presentation

V. ＊**Course Goal**：

The main sources of Frobenius structures come from the studies of Gromov-Witten invariants and from deformation and singularity theories. One expects that the Frobenius structures provide a uniform way in the comparison of dual pairs in mirror symmetry. The goal of this course is to understand the meaning of this rich structure and to learn the construction of them from different sources, including the Gromov-Witten theory and the unfolding of singularities.

We prefer to formulate the definition of Frobenius structure from a more algebraic point of view via the language of families of flat connections. On the other hand, we shall also learn some more explicit examples studied by Atsushi Takahashi and his coauthors, where they use this language to establish some mirror symmetry correspondences in dimension one (orbifold projective line). Through the study, we would like to see if one could find a new way or some new examples of constructing Frobenius structure from algebraic geometry.