1011-13-284 **C-Y. Jean Chan*** (cchan@uark.edu), SCEN 301, Department of Mathematics, University of Arkansas, Fayetteville, AR 72701. *Two Extended Forms of the Hirzebruch-Riemann-Roch Formula.* Preliminary report.

By the Hirzebruch-Riemann-Roch theorem, there exists a correspondence between the total Chern classes and the Hilbert polynomials of coherent sheaves on the projective space $\mathbb{P}_k^d$ where k is an algebraically closed field.

We discuss two possible extensions: (1) to a product of projective spaces $\mathbb{P}_k^{d_1} \times \mathbb{P}_k^{d_2}$; and (2) to a projective subvarity of $\mathbb{P}_A^d$ over a regular local ring A.

In (1), each coherent sheaf is associated with a bigraded module and the Hilbert polynomials under consideration are in two variables. A similar equivalence between the total Chern classes and the Hilbert polynomials exists as is on $\mathbb{P}_k^d$. (2) is a joint work with Claudia Miller in which the setting is slightly different. We consider a finitely generated module M over A and relate the Hilbert-Samuel polynomial of M with the Chern classes of a sheaf associated to M in the blow-up of SpecA. (Received August 29, 2005)