Class: MAT 514-Enumerative Combinatorics
Time: TTh 12-1:15 (Flexible! We may change this if we find a time we all like)
Text: *Enumerative Combinatorics I&II* by Richard P. Stanley
Instructor: Susanna Fishel
We'll focus on two themes– various structures and counting techniques that are useful in many situations and various situations where counting problems arise.

Some topics
(1) Classic counting-permutation statistics, generating functions, set and integer partitions, etc.
(2) Posets-properties, generalizations of inclusion-exclusion, applications to geometry, algebra, topology

\[
\prod_{k \in \mathbb{Z}} (1 - x^k) = \sum_{n \geq 0} (-1)^n x^{n(n-1)/2}
\]

\[
\sum_{\pi \in S_n} q^{\text{inv} \pi} = \prod_{k \geq 1} \sum_{i=0}^{k-1} q^i
\]