Problem Sets

Problems will be assigned during lectures, to be handed in every week or two. You are encouraged to *discuss* the problems with classmates and with me, but you must write-up the solutions on your own. The write-ups must be carefully done and must give credit to those who helped you and to any references you used. Let me emphasize that you must write clear and precise solutions; these problem sets are a core part of the course and will be taken seriously.

Presentations

Each of you will give one presentation, 50 to 55 minutes in length. You should meet with me to discuss the topic, and meet with me a couple of additional times to discuss what you intend to say and how you plan to structure your talks. You should also practice each talk at least once before giving it to the class.

Here are some ideas, but you are by no means limited to these. When you come talk to me I can provide descriptions of what these mean and provide you with references.

Generalized homology and cohomology theories.
Bott periodicity.
K-theory.
Cobordism.
Stable homotopy.
Brown Representability.
Spectra.
Spanier-Whitehead duality.
Steenrod operations.
Characteristic classes.
Chern and Steifel Whitney classes.
The classifying space of a group and G-bundles.
Classifying space of a category.
Morse theory.
The Hopf invariant.
Simplicial sets.
Geometric realization.
Model categories.
The fundamental groupoid.
Knot Theory.

And there are lots more...