Objectives
1. To plan the gathering of data suitable for evaluation of a hypothesis;
2. To use statistical analyses to evaluate a hypothesis;
3. To learn about environmental conditions;
4. To learn about a topic of interest to you;

Essential components of all projects:
1. A hypothesis addressing the underlying idea;
2. A plan for data collection suitable to test the hypothesis;
3. Collection of data with which to test the hypothesis;
4. Statistical analysis of data to test the hypothesis;
5. Evidence of creative thinking;
6. A project report
7. A presentation

Timeline for projects
1. Topics must be chosen – 3/18/09  I will notify you if it seems infeasible.
2. Hypotheses formulated – 3/25/09
3. Plan for sampling/analyses - 4/1/09
4. Sampling and analyses completed - 4/16/09
5. Last Presentation file sent to me by 4/24/09
6. Project Report sent to me (electronically) by 4/27/09 at 5:00 p.m.

Potential project topics:
This listing is not intended to direct or stifle your own thinking. There are endless numbers of possible topics. Do not be afraid to think of other topics and ask me if they are feasible.

Huron Creek projects:
1. What is the relationship between flow rate and stream stage at a good measuring station?
2. What is the relationship between turbidity and suspended solids?
3. Where do maximum chloride concentrations occur in the stream and what could be done to mitigate this problem?
4. Is there evidence of septic leachate in the stream?
5. What is the relationship between suspended solids and flow rate?

A. Last year's projects:
1. Effects of waterfalls on stream water quality (TDS, pH, DO)
2. Relationship between stream flow rate and pH
3. Comparison of lake water quality and effluent water quality (pH, TDS, Cl, DO)
4. Effects of precipitation on pH
5. Effects of sludge addition to stamp sands
6. Comparison of CO, CO₂ and PM₂.₅ in smoking and non-smoking areas
7. Comparison of water quality (pH, TDS, Ca) in drinking water of different towns
8. Effects of ski-area snow makers on meltwater quality

B: Snow-related projects (water content, pH, stream flow, conductivity, TDS, Cl-)
1. What weather variables control the timing of snowmelt
2. What is the relationship between streamflow and rate of snowmelt
3. What local factors affect the composition of snowmelt
4. How far from a road does road salt affect snow or meltwater?
5. How far from township salt piles can road salt be detected in meltwater?
6. What is the relationship between TDS and streamflow rate?
8. What factors control the pH of snow meltwater?
9. How does the pH of snow compare with that of rain?
10. How does the timing of snow melt compare with the timing of salt runoff?
11. How do forests affect the chemistry of snow?
12. Are deicers from the airport entering streams and lakes?

C: Air-related projects (size distribution, Particle concentrations, CO, CO₂ concentrations)
1. How is the size distribution of particles affected by snowcover?
2. How far from roads can road dust be detected?
3. How do dust concentrations change with elevation?
4. Are CO₂ concentrations higher above lakes than above land?

D. Mining impacts
1. How do mine tailings affect the abundance of invertebrates in waterways?
2. How does the presence of mine tailings affect the temperature and water content of soils?
3. Did mining have an impact on people's life expectancy?

Others:
1. How does development affect the biota in streams?
2. How does sewage discharge affect the biota or chemistry of streams?
3. How does logging affect stream siltation?
4. Has the composition of solid waste at MTU changed since 1998?

Data analyses:
1. Are there historical trends in weather patterns over Lake Superior?
2. What causes the historical trends in snowfall amounts in the Houghton area?
3. What factors control DOC concentrations in Lake Superior?
4. Is there evidence of a historical warming trend in Houghton?