

Lab 2 Lesson Plan

General Info

- Statistical analysis of sediments
- Work with partner and hand in a joint report
- Select a full suite of samples (placed at microscopes)

Sieving

- What is it? Several trays with different screen sizes (large on top and small at bottom). We use $\frac{1}{2}$ phi intervals - 10 trays and a pan. All in sand range (very coarse to fine sand) and pan includes fines (silt and clay).
- How? Stack coarser mesh on top and collection pan at bottom. Machine shakes stack of sieves for 15 minutes. Different grain sizes in each tray.
- Why? To determine grain size distribution and separate sample into $\frac{1}{2}$ phi intervals.
- Explain - Grain Size Scale and Conversion Tables **handout**
- We have sieved it for you and collected the samples for analysis.
- Part A – microscope
- Part B – sieve data statistics
- Plotting in both Parts A and B

Part A

- Examine each interval under the microscope
- Q1: Fill out chart - **handout** (composition and percentages, roundness - **handout**, sphericity - **handout** and surface texture for each rock and mineral).
- Q2: Plot results on:
 - a) Ternary Diagram – **handout**
 - b) Change in composition with grain size
- Composition should change with grain size. It is a reflection of hardness and density.

Part B

- Given grain size results from sieving – **handout**

Question 3:

- Q3a) Calculate and make table: phi size, weight of sieve, weight of sieve + sample, weight % of sample, cumulative weight % (write table headings on board).

- Plot: Q3b) Histogram of weight % and Q3c) cumulative weight %
- Calculate statistical parameters using graphical method

Question 4

- Bring it all together
- Interpret depositional environment.
- Look at all of the data that you have accumulated.
- Refer to your graphs and calculated results, textbook, etc. for a complete answer.

Question 5

- Plot laser grain size data
- Calculate grain size statistical parameters using the method of moments
- Describe your sample based on your results

Plots Required

- On board: a list of plots required
 - Grain size (phi) vs. % composition (Q2)
 - (Note: grain size scale in reverse, coarse at left)
 - (Note: each mineral should have a line)
 - Histogram: grain size (phi) vs. weight % (Q3b)
 - (Note: grain size scale should be $\frac{1}{2}$ phi intervals)
 - Grain size (phi) vs. cumulative weight % (Q3d)
 - (Note: plot on probability paper or on computer)
 - Histogram of laser data; percent (frequency)
 - Cumulative percent frequency curve of laser data