

Timeline for Exploration Topics

Formation of group and choose topic (week 1: Jan. 18 – 21):

Elucidate motivation for chosen topic: Why are you interested in the topic? Why is the topic interesting in general?

Introductory studies: How, when and who discovered the phenomena you want to study, (physics encyclopedia may be useful)? What do you think the present understanding of phenomenon is? (week 2: Jan. 22 – 28)

Goals of experiment: What quantity or effect do you want to ultimately measure and what do you want to extract from the measurements and observations? What materials and devices need be obtained or purchased? (week 2: Jan. 22 – 28)

Group presentations on introductory studies and goals of experiments (Jan. 30).

Methods of experiment: How do you plan to execute the experiment and carry out the desired observations? In PC-based instrumentation, familiarity with Labview program would be useful. Data acquisition may be done with Basic programming as well. What difficulties or problems, if any, do you anticipate and how do you plan to deal with them? Gather and inspected required equipment.(week 3: Jan. 29 – Feb. 4)

Apparatus: What equipment do you need? Identify the pieces of equipment. What are the requirements on the measurement devices such as precision, stability, range of sensitivity, etc.? Are the equipments available in the laboratory? What are the working principles of the equipments? Experiments are usually carried out using multiple of devices. You need to understand the proper usage of each equipment.

Group presentations on interim report (Feb. 13).

Procedure: How do you plan to carry out the experiment including time schedule? What are the detailed procedures of the experiment? How do you hook up electronics equipment? What are your plans for diagnostic tests to verify proper running of each equipment?

Group written interim report: including introduction, motivation, methods and apparatus diagnostics (week 7: Feb. 27)

Preliminary experimental runs. (Begin in week 8: Mar. 6)

Data Acquisition: What quantities are needed to be measured and how are they measured and recorded? How do you plan to display the data?

Analysis: How do plan to interpret the data? How will you compare with theories?

Make **final group report and presentation.** (week 13 – 14)

