General Rubric for Grading Group Documents
[Note: not all of these are relevant for each of the labs]

A: Outstanding.
B: Exceeds expectations
C: Satisfactory
D: Below Satisfactory
F: Nothing to Assess

Exercises:

- *All exercises are completed.*
- *each problem is **set up correctly***
- *any figures are **clear** and **relevant**; variables are either standard usage or clearly **defined**.*
- *arguments and/or calculations are **correct** and **easy to follow**.*

Description of the experiment

- *The diagrams + annotations **succeed in communicating how the apparatus works** and how it was used.*
- *Diagrams are **functionally clear**: the diagrams would make sense to other students in the course.*
- *Diagrams and annotations are **correct**.*

Data reduction

- *Raw data are **correct**: no significant mistakes in collection/reduction of data. Data have correct **units**.*
- *The data set is **complete**: sufficient to calculate all important results and random uncertainty.*
- *Relevant conditions pertaining to collected data (e.g., sample type, run number, equipment settings) are present.*
- *Tables of data include an **estimate of uncertainty** for each data point along with reasons for assigning that uncertainty.*

Graphs:

- *Graphs are appropriately sized to highlight the relevant results.*
- ***Legends** are given for graphs with multiple data sets and/or curves*
- *Data points are bare—point symbols not connected with lines*
- *When applicable, points include **error bars***
- *Theoretical curves and/or fits are shown as lines (not points).*
- *Axes are **labeled** with quantity and correct units, and each graph is **titled**.*

Data Analysis:

- ***All** data taken are analyzed*
- *Analysis of data is **correct***
- *All calculations and/or fitting performed are **fully and clearly described**, including any **formulas** used.*
- *Variables are either obvious (e.g., standard constants) or **defined**.*
- *Statistical **uncertainty** is calculated for numerical results*
- *Numerical results are stated with correct format, **units**, **significant digits** and **uncertainty**.*
- *Final results are **critically evaluated** – different results are compared to each other, noting trends or patterns; results are compared to literature or expected values and agreement is discussed.*
- ***Sources** for literature values are cited in sufficient detail.*

General Rubric for Individual Reports

First Read		**Second Read (or post due-date)**	
A = accept	A or A– level work	**A = accept**	A-level work
AwR = accept with revision	B or B+ level work	**AwR = accept with revision**	B-level work
R = Rejected	Below B level work	**B-, C+, C, C-, D+, D-**	As appropriate
	Reverts to F if not resubmitted	**F**	Not (re)submitted.

Overall

- *It is clear the writer **understands** the experiment.*
- *Writing is **clear** and **logically structured***
- ***English is correct** in terms of spelling, grammar, word choice and usage.*
- ***Style** of writing follows conventions **appropriate** to a scientific journal or meeting abstract.*
- *Conforms to **formatting** rules (11-12 pt font, 1 inch margins) and **length** limits (1-4 pages).*

Summary Abstract:

- *First Paragraph states the **purpose** of the experiment in a **general way**, highlighting the **essential physics**.*
- *Second Paragraph describes the main techniques and experiment in a **general way**; **highlights the connection** to the measured physical property and **important conditions** that impact interpretation of results; t**rivial details are omitted**.*
- *Third Paragraph states the results clearly, **with correct units and significant figures**; **compares** results to each other and/or literature.*

Answers to Prompts:

- *All prompts are addressed*
- *Answers are **self-contained**, in complete sentences.*
- *Any figures are **clear** and **relevant**; variables are either standard usage or clearly **defined**.*
- *Arguments and/or calculations are **correct** and **easy to follow**.*
- *Answers are **correct**, and cover all aspects of the prompt.*

General Rubric for Individual Analysis

A: Outstanding.
B: Exceeds expectations
C: Satisfactory
D: Below Satisfactory
F: Nothing to Assess

Code structure

- Code is **commented** within the code boxes and/or Markdown boxes
- Variable names make sense; a comment accompanies when they are introduced.
- Code is original (although built from templates is fine).

Graphs of Final Fits and Results:

- *A Markdown box and/or Labels on the graph make it clear what is being addressed in the graph.*
- *Graphs are appropriately sized to highlight the relevant results.*
- ***Legends** are given for graphs with multiple data sets and/or curves*
- *Data points are bare—point symbols not connected with lines*
- *When applicable, points include **error bars***
- *Theoretical curves and/or fits are shown as lines (not points).*
- *Axes are **labeled** with quantity and correct units, and each graph is **titled**.*

Data Analysis:

- ***All** data taken are analyzed*
- ***All** relevant analyses in the template are carried out (note: it is OK to do them in a different order or using a different approach)*
- *Analysis of data is **correct***
- *All calculations and/or fitting performed are **fully and clearly described**, including any **formulas** used.*
- *Variables are either obvious (e.g., standard constants) or **defined**.*
- *Statistical **uncertainty** is calculated for numerical results*
- *Numerical results are stated with correct format, **units**, **significant digits** and **uncertainty**.*