



# EXPERIMENTAL DESIGN CHECKLIST



See General Rules, Eye Protection & other Policies on [www.soinc.org](http://www.soinc.org) as they apply to every event.

## 2021 Experimental Design Division B Checklist

(Note: The maximum points available for each task are shown.)

### Part I – Design and Construction of the Experiment (58 pts)

#### A. Statement of the Problem (2 pts)

- ② ① ① **Statement addresses the experiment including variables (Not a yes/no question)**

#### B. Hypothesis (6 pts)

- ② ① ① **Statement predicts a relationship between the independent and dependent variables**
- ② ① ① **Statement gives specific direction to the prediction(s) (e.g., a stand is taken)**
- ② ① ① **A rationale is given for the hypothesis.**

#### C. Variables (16 pts)

##### a. Independent Variable (IV) (6 pts)

- ② ① ① **Correctly identified and defined**
- ④ ③ ② ① ① **Levels of IV given**

##### b. Dependent Variable (DV) (4 pts)

- ④ ③ ② ① ① **Correctly identified and defined**

##### c. Controlled Variables & Constant (CV) (6 pts)

- ② ① ① **First CV correctly identified**
- ② ① ① **Second CV correctly identified**
- ② ① ① **Constant correctly identified**

#### D. Materials (4 pts)

- ② ① ① **All materials are listed and quantified**
- ② ① ① **No extra materials are listed**

#### E. Procedure and Set-up Diagrams (14 pts)

- ② ① ① **Procedure is presented in list form**
- ② ① ① **Procedure is in a logical sequence**
- ② ① ① **Steps for repeated trials are included**
- ② ① ① **Multiple diagrams of setup are provided**
- ② ① ① **All diagrams are appropriately labeled**
- ④ ③ ② ① ① **Enough information is given so another could repeat procedure**

#### F. Qualitative Observations (6 pts)

- ② ① ① **Observations about procedure provided**
- ② ① ① **Observations about the results provided**
- ② ① ① **Observations given throughout the course of the experiment**

#### G. Quantitative Data - Data Table (10 pts)

- ② ① ① **All raw data is provided**
- ② ① ① **A condensed data table showing only the data to be graphed provided**
- ② ① ① **Tables and columns labeled properly**
- ② ① ① **All data has units**
- ② ① ① **Example calculations for derived variables are given**

### Part II – Data, Analysis and Conclusions (66 pts)

#### H. Graph (12 pts)

- ④ ③ ② ① ① **Appropriate Graph is provided**
- ④ ③ ② ① ① **Graph properly titled and labeled**
- ④ ③ ② ① ① **Appropriate scale and units included**

#### I. Statistics (14 pts)

- ④ ③ ② ① ① **Statistics of Central Tendency (i.e., best fit, median, mode, mean)**
- ④ ③ ② ① ① **One example calculation is given for each statistic including units**
- ④ ③ ② ① ① **Statistics of Variation (i.e., min, max, range)**
- ② ① ① **Calculations are accurate**

#### J. Analysis of Claim/Evidence/Reason (CER) (18 pts)

- ② ① ① **Statistics Claim completed logically**
- ② ① ① **Statistics Evidence completed logically**
- ② ① ① **Statistics Reasoning completed logically**
- ② ① ① **Outliers Claim completed logically**
- ② ① ① **Outliers Evidence completed logically**
- ② ① ① **Outliers Reasoning completed logically**
- ② ① ① **Data Trend Claim completed logically**
- ② ① ① **Data Trend Evidence completed logically**
- ② ① ① **Data Trend Reasoning completed logically**

#### K. Possible Experimental Errors (8 pts)

- ④ ③ ② ① ① **One specific error is identified and effect on results discussed.**
- ④ ③ ② ① ① **Second specific error is identified and effect on results discussed.**

#### L. Conclusion (8 pts)

- ② ① ① **Hypothesis is re-stated**
- ② ① ① **Hypothesis Claim completed logically**
- ② ① ① **Hypothesis Evidence completed logically**
- ② ① ① **Hypothesis Reasoning completed logically**

#### M. Recommendations for Future Experimentation (6 pts)

- ② ① ① **Suggestions to improve the experiment are given**
- ② ① ① **Suggestions for practical applications of experiment are given**
- ② ① ① **Suggestions for future experiments are given**

School: \_\_\_\_\_ Team# \_\_\_\_\_

Point Total: \_\_\_\_\_/124

Deduction multiplier(s): \_\_\_\_\_  
Non-clean up (0.95), Off topic (0.75), or Non-lab (0.25)

Final Score: \_\_\_\_\_