Experimental Design
Division C Rubric 2003

1. Statement of problem
   - _____ Not a yes/no question
   - _____ Statement narrows down topic area (implies a specific experiment)
   - _____ Generalized variables included
   - _____ Problem is clearly testable

2. Hypothesis
   - _____ Statement predicts a relationship or trend
   - _____ Statement gives specific direction to the predictions(s): A stand is taken.
   - _____ Prediction includes both independent and dependent variables
   - _____ A rationale is given for the hypothesis

3. Variables
   - Independent Variable
     - _____ IV correctly identified
     - _____ IV operationally defined
     - _____ At least three levels of IV given
   - Dependent Variable
     - _____ (2) DV correctly identified
     - _____ DV operationally defined
   - Controlled Variables
     - _____ One CV correctly identified
     - _____ Two CVs correctly identified
     - _____ Three CVs correctly identified
     - _____ Four CVs correctly identified

4. Standards of Comparison
   - _____ A SOC is identified
   - _____ The SOC makes logical sense for the experiment being done
   - _____ Reason given for why response is SOC

5. Materials and Procedure
   - _____ All materials used are listed properly (no extras)
   - _____ Materials listed separately from procedure
   - _____ Procedure well organized
   - _____ Procedure is in a logical sequence
   - _____ (2) Enough information is given so another could repeat procedure
   - _____ Diagrams used
   - _____ Repeated trials

6. Qualitative Observations
   - _____ Observations about results given
   - _____ Observations about procedure / deviations
   - _____ Observations about results not directly relating to DV(extra info)
   - _____ Observations given throughout course of experiment

7. Quantitative Data
   - Data Table
     - _____ All raw data is given
     - _____ All data has units
     - _____ All data reported using correct significant figures
     - _____ Condensed table with most important data included
     - _____ Table(s) labeled properly
     - _____ Example calculations are given
   - Graph(s)
     - _____ Appropriate type of graph used
     - _____ Graph has title
     - _____ Graph labeled properly (axes/series)
     - _____ Units included
     - _____ Trends in data are represented
     - _____ Appropriate scale used
   - Statistics
     - _____ Measure of central tendency
     - _____ Measure of variation
     - _____ Regression analysis
     - _____ Other appropriate statistic used

8. Analysis and interpretation of data
   - _____ All data discussed: 'What it is'
   - _____ All data interpreted: 'What it means'
   - _____ Unusual data points pointed out
   - _____ Unusual data points explained
   - _____ Trends in data are pointed out
   - _____ Trends are interpreted/explained
   - _____ Statistics are explained
   - _____ Enough detail is given to understand data
   - _____ Response is clear and concise
   - _____ All statements are supported by the data

9. Possible Experimental Errors
   - _____ Possible reasons for errors are given
   - _____ Important info about data collection given
   - _____ Effect errors had on data discussed

10. Conclusion
    - _____ Hypothesis is evaluated according to data
    - _____ Hypothesis is re-stated
    - _____ **Reasons** to accept/reject hypothesis given
    - _____ All statements are supported by the data

11. Recommendations for further experimentation
    - _____ Suggestions for improvement of specific experiment are given
    - _____ Suggestions for other ways to look at hypothesis given
    - _____ Suggestions for future experiments given
    - _____ Practical application(s) of experiment given