

Showcase Competition

Biotech: Scientific Research Outline

Miami Valley Tech Prep Showcase will require Biotech students this year to complete the following three items below for teams competing.

1. *Scientific Paper*
2. *Scientific Journal*
3. *Presentation Board (tri-fold/digital or other creative template)*

1. **Scientific Journal-**

Use the typical format for a scientific journal using the scientific method

- A composition or bound notebook works well.

- Front cover should include;

Your Name, Contact Information, Division, School

- Use a blue or black pen to make all entries in the notebook. Incorrect entries may be lined out with a single line only and must be labeled with initials and the date. No white out is allowed!

- Graphs and other small sheets of paper should be pasted/stapled in the notebook. No loose papers!

- Always date every entry, just like a journal. Entries should be brief/concise. Full sentences are not required. Neatness is important.

Scientific Journal Requirements:

A) Notes & Reflections

B) Background Information (description of the problem, historical background of the topic, scope of the research project that will take place “future tense”)

C) Question

D) Hypothesis

E) Experimental Procedure:

(1) *Material List “glassware, machinery, chemicals, accessory tools”*

Glassware (size & quantity.), machinery identified (model type), chemicals (concentration identified), accessory tools (model type & quantity)

(2) *Chemical Reagents and equations shown with units*

(3) *Protocol “step by step procedure in past tense; includes dependent vs. independent controls”*

F) *Data Analysis: includes any charts, graphs, diagrams, photos (include titles, labels, and captions)*

G) *Conclusion: “4 parts” state what the data analysis means, hypothesis correct or not & why, experimental errors, and future studies*

2. **Final Scientific Paper-** *(typed, 1 inch margins, 12 font, times new roman)*

A) *Cover and Title Page*

B) *Table of Contents (starts with the Abstract & ends with the References)*

C) *Abstract (summary of project using the scientific method), < 250 words*

D) *Introduction (background description of the problem, historical background of the topic, scope of the research project that will take place “future tense”)*

E) *Question(s)- The information that you are trying to solve*

F) *Hypothesis- Educated Guess*

G) *Material List:*

Glassware (size & quantity.), machinery identified (model type), chemicals (concentration identified), accessory tools (model type & quantity)

H) *Protocol- “step by step procedure in past tense; includes dependent vs. independent controls”*

I) *Data Analysis: includes charts, graphs, tables, graphs, diagrams, photographs, video (include titles, labels, and captions)*

J) *Conclusion(s): 4 parts to this section*

(1) *state what the data analysis means*

(2) *state whether or not the hypothesis was correct or not*

(3) *experimental errors*

(4) *recommend further research studies normally called “Future Studies”.*

(K) *References (primary and secondary references)*