

Honors Biology Requirements – 2021/2022

Freshman biology students at SRMS have the opportunity to achieve an “Honors” designation for biology at the end of each quarter. Following are the requirements:

1. Achieve “proficient” (level 3) for each objective (“I can...” statement) in the current quarter’s learning goals.
 - a. Level 3 or above on all Lab Books and Assessments.
2. Complete all “advanced” (level 4) objective(s) at a Level 3 Proficiency or above.
 - a. Standard 1 – Ecology
 - i. Design a solution that reduces the impact caused by human activities on the environment and biodiversity by doing the following: 1) define a problem, 2) identify criteria and constraints, 3) develop possible solutions using models, 4) analyze data to make improvements using mathematics and computations, and 5) optimize a solution. (Examples may include, but are not limited to: urbanization, building dams, pollution, deforestation, introduction of invasive species.) [Std 1.5]
 - b. Standard 2 – Structure and Function
 - i. Use a model to illustrate the shape, size, quantity, structure and function of the major cell organelles: cell membrane, cytoplasm, nucleus, ribosome, rough endoplasmic reticulum (RER), smooth endoplasmic reticulum (SER), Golgi apparatus, mitochondria, lysosome, centrosome, vacuole, cell wall, and chloroplast. [Std 2.2]
 - ii. 18) Construct an explanation and use a model to illustrate the role of meiosis for gamete production during the process of sexual reproduction. [Std 2.5]
 - iii. Plan and carry out an investigation to illustrate asexual reproduction. (Examples may include, but are not limited to: budding in yeast, binary fission in bacteria, propagation in plants.) [Std 2.5]
 - c. Standard 3 – Genetics
 - i. Evaluate biotechnology design solutions used to identify and/or modify genes, identify criteria and constraints, analyze available data on proposed solutions, and determine an optimal solution in order to solve a genetic problem. [Std 3.5]
 - ii. Engage in argument from evidence that focuses on the effectiveness of a genetic biotechnology solution. [Std 3.5]
 - d. Standard 4 – Evolution
 - i. Define a real-world natural selection/adaptation problem, identify criteria and constraints, analyze available data on proposed solutions, and determine an optimal solution. (Examples may include, but are not limited to: bacterial resistance to drugs, plant resistance to herbicides, the effect of changes in climate on food sources and pollinators.) [Std 4.4]
3. Earn a Quarterly Proficiency Level 3.37 or Above
 - a. 3.37 – 3.49 Proficiency Score Totals = A-
 - b. 3.50 – 4.00 Proficiency Score Totals = A

4. Undertake an independent project – investigation, experiment, or experience – aligning with the current quarter’s learning goal (standard).
 - a. Obtain pre-approval from your teacher.
 - b. Include some type of data, mathematics and analysis in your final product.
 - c. Complete a written report.
 - i. Report Format:
 - 1) Use a report cover
 - 2) Typed and printed
 - a) Double-spaced
 - b) Font
 - i. Times New Roman
 - ii. 12 point
 - c) Margins – 1 inch
 - d) Indented paragraphs
 - e) Page numbers
 - i. Lower right
 - ii. Page number only
 - iii. Include page numbers on graphs, charts, etc.
 - 3) Include the following pages:
 - a) Title page [1 page]
 - i. Name
 - ii. Period and class (i.e., 1st Period Biology)
 - iii. Report title
 - iv. Date (format – 10/22/19)
 - b) Table of contents [1 page]
 - c) Questions, inquiry, and hypothesis [1 page]
 - d) Materials list (if applicable) [1 page]
 - e) Experimental procedure (if applicable) [1 page]
 - f) Data analysis and discussion [3 pages]
 - g) Conclusion [1 page]
 - h) Bibliography [1 page]
 - ii. Written report will be 8-10 pages, depending on the type of project.
 - 1) Charts, graphs, etc., should be included, but do not count toward the page total.
 - iii. Final work and report are due approximately one week before the end of each quarter.
 - d. Where should you start?
 - i. Start with the questions you have about the current learning goal.
 - 1) Where can you find the information?
 - 2) What new research is being done in that subject?
 - 3) Are there current events that interest and inspire you?
 - 4) Have you had a recent experience that made you curious about something?
 - 5) What questions do you have that were not covered in class?