



## Rochester Community Schools

### *Biology Credit By Exam*

*Preparation for taking the Biology exam*

*GRADE: 9-12 (Required)*

*Biology addresses the Life Science and Earth Science Expectations of the Michigan Science Standards. Students identify the unique properties of living systems as they relate to cells and organic molecules. Students examine ecosystems and their characteristics. Students explain the process of genetic reproduction and how traits are inherited. Students define evolution and examine factors that influence population growth and decline. Students describe how different species of plants, animals and microorganisms that live today are related. Students participate in labs that reinforce the biological concepts learned.*

To prepare for the Credit by Exam (CBE) for this course, you will need to do the following:

**The following concepts will be covered on this assessment.**

- Ecology: Food Chains, Food Webs, Ecosystems, Adaptations, Characteristics of Life, Nutrient Cycling
- Energy and Ecosystems: Biogeochemical cycles, Photosynthesis & Cellular Respiration, Populations & Communities, Levels of Organization w/in organisms
- Variation of Traits and Inheritance: Punnett Squares, Pedigrees, Genotype/Phenotype
- Cell Growth and Division: Mitosis, Meiosis, Characteristics of Cancer cells, Cell Cycle, Protein Synthesis
- Mechanisms of Evolution: Natural Selection, Phylogeny, Selective Pressures, Evolution, human impacts on ecosystems, Plate tectonics/co-evolution of earth's surface & life on earth
- Speciation and Common Ancestry: Natural Selection, Speciation, Common Ancestry, Geologic History, Artificial Selection
- Human Impacts on Earth Changes: Plate tectonics, resource availability, human impacts on species and earth's systems, History of Earth

**The following skills/concepts should be understood/reviewed and students will need to apply them within the assessment and their laboratory task:**

- Interpret and analyze data tables and graphs
- Evaluate models of scientific concepts
- Evaluate effectiveness of experimental setups
- Calculate variables associated with concepts (formula sheet will be provided)
- Analyze lab techniques and procedures to determine appropriate materials, steps to follow, and error analysis

**Michigan K-12 Science Standards**

- |            |            |            |            |             |
|------------|------------|------------|------------|-------------|
| ● HS-LS1-1 | ● HS-LS2-1 | ● HS-LS3-1 | ● HS-LS4-1 | ● HS-ESS1-5 |
| ● HS-LS1-2 | ● HS-LS2-2 | ● HS-LS3-2 | ● HS-LS4-2 | ● HS-ESS1-6 |
| ● HS-LS1-3 | ● HS-LS2-3 | ● HS-LS3-3 | ● HS-LS4-3 | ● HS-ESS2-1 |
| ● HS-LS1-4 | ● HS-LS2-4 |            | ● HS-LS4-4 | ● HS-ESS2-2 |
| ● HS-LS1-5 | ● HS-LS2-5 |            | ● HS-LS4-5 | ● HS-ESS2-3 |
| ● HS-LS1-6 | ● HS-LS2-6 |            | ● HS-LS4-6 | ● HS-ESS2-6 |
| ● HS-LS1-7 | ● HS-LS2-7 |            |            | ● HS-ESS2-7 |
|            | ● HS-LS2-8 |            |            | ● HS-ESS3-1 |
|            |            |            |            | ● HS-ESS3-2 |
|            |            |            |            | ● HS-ESS3-3 |
|            |            |            |            | ● HS-ESS3-4 |
|            |            |            |            | ● HS-ESS3-5 |
|            |            |            |            | ● HS-ESS3-6 |