**BIOL 150 Principles of Biology I**

**Metabolism: Cellular Respiration**

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| **Stage 1 – Desired Results** |
| **Established Goals:** Describe the metabolic process of cellular respiration. Describe the basic principles of chemistry that are important to biology. Identify the structure and functions of macromolecules important to life. Locate, identify, collect, organize, analyze, and interpret data. |
| **Understandings:****Students will understand that…** Cellular respiration is connected or interacts with other metabolic pathways that involve many types of biomolecules other than just glucose or other carbohydrates. Protein composition and conformation is critical for normal functions, is responsible for some diseases, and appears to haveevolved over time from precursors. | **Essential Questions:** What is cellular respiration? Where does it happen? What enzymes/proteins are involved? How does cellular respiration differ between cell types? How can I find data addressing these questions? How can I analyze or compare data from different source. |
| **Student objectives (outcomes):****Students will be able to…** Ask questions and develop hypotheses about metabolism. Develop search strategies and conduct literature survey to answer their question or revise their hypotheses. Locate, retrieve, and use relevant biological information about metabolic pathways, related enzymes, metabolites, and genes. Summarize their results in written report and present to class. |
| **Stage 2 – Assessment Evidence** |
| **Performance Task(s):** Bioinformatics/Omics Projecto Enzyme report.o Metabolic pathway report.o Protein sequence andhomologue report.o Final report & Presentation | **Other Evidence:** Peer-review of papers Peer-evaluation of group participation Peer-evaluation of presentations |
| **Stage 3 – Learning Plan** |
| **Learning Activities:** Begin with an entry question (What does your metabolism have in common with your intestinal microbial flora, a plant, a worm, or a fly?). Lectures will introduce key terms and concepts regarding protein structure/function/synthesis and metabolic pathways involved in cellularrespiration. Students will express interests in diseases and/or organisms. Instructor will assign groups based on common interests and diversity of backgrounds. Groups will meet and generate questions/hypotheses about disease/organisms- related metabolism. |

 Students will individually conduct literature survey, select 3 sources, and prepare reference information and short annotation to be brought to class or shared online.

 Groups compile annotated bibliography on their research topic.

 Groups discuss their gathered information and revise their question/hypothesis and develop strategy for finding relevant information. Teams divide tasks among

members.

 Teams compile information; consider what additional information or types of analysis are needed.

 Analyze data, prepare figures, and summarize results.

 Prepare draft of report.

 Groups will peer-review other groups report, then self-evaluate their report considering peer-review, and revise report.

 Groups will prepare presentation.

 Groups will turn in their report and draft presentation for instructor preview/feedback.

 Instructor will provide feedback and preliminary grade.

 Groups will revise their report and conduct group-peer evaluations.

 Groups will make final presentation of results and peer-evaluate presentations.