# 2.A.1: Objectives:

1. Define vocabulary terms:
    a. Metabolism
    b. Anabolic
    c. Catabolic
    d. Kinetic energy, thermal energy, potential energy, chemical energy
    e. Entropy
    f. Spontaneous process
    g. Free energy (ΔG)
    h. Exergonic
    i. Endergonic
    j. Energy coupling

2. Compare and contrast catabolic and anabolic pathways

3. Describe the first law of thermodynamics

4. Describe and give an example of the second law of thermodynamics

5. Discuss how living things are impacted by the second law of thermodynamics

6. Differentiate between exergonic and endergonic reactions and provide an example of each

7. Draw a graph depicting an exergonic reaction and an endergonic reaction

8. Discuss the structure of ATP and explain how it is used to perform work

9. Explain the role of ATP in energy coupling between exergonic and endergonic reactions

10. Analyze energy profiles of chemical reactions

11. Differentiate between endotherms and ectotherms

12. Provide several examples of adaptations to regulate body heat

13. Explain the “trade-offs” between an organisms homeostasis and reproduction

14. Identify and define the 3 components of life history

15. Discuss the different strategies, as it relates to energy, of each component of life history

16. Differentiate between semelparity and iteroparity

17. Discuss how the laws of thermodynamics apply to energy flow in an ecosystem

18. Identify the trophic levels in a food chain/web

19. Explain the role of detritivores

20. Define primary and secondary production

21. Explain how energy is lost through trophic levels