STUDENT LEARNING OBJECTIVES IN THE DEPARTMENT OF BIOLOGY AT UNCG

Students competing an undergraduate degree in biology at UNCG will be able to:

1. understand and apply to everyday life the biological principles of energy transfer, cell biology, genetics, organismal diversity, and ecology.

2. demonstrate knowledge of the chemical properties of biologically important molecules including carbohydrates, lipids, proteins, nucleic acids, and water.

3. describe the structures and functions of prokaryotic and eukaryotic cells, the means by which cells utilize energy from the environment, reproduce, how cells can become specialized and combined to form tissues and organs, and their communication systems.

4. describe the neural and hormonal mechanisms that coordinate homeostasis in diverse living organisms responding to diverse selective pressures.

5. describe the structure and function of genes, the relationship between genotype and phenotype, and the means by which genetic traits are passed along from one generation to the next.

6. describe how the genome directs production of cellular proteins, including the role of transcription factors in the regulation of gene expression.

7. solve problems in the areas of transmission, molecular, and population genetics, including application of genetic principles to genetic diagnostics, gene therapy, genetic engineering, and forensics.

8. demonstrate understanding of the ecological concepts and principles of scale, hierarchy, heterogeneity, and geological time.

9. describe the evolutionary framework of biology, the diversity of life, and the interconnections among all life forms, including the role of model systems in the development of biological knowledge.

10. demonstrate knowledge of the physical, ecological, evolutionary, and taxonomic characteristics of at least one major group of eukaryotic organisms.

11. describe relationships between manipulated and measured variables in biological settings and derive and communicate accurate conclusions from biological data presented in graphs and flow charts in primary reports and news articles.