

UNIVERSITY OF LOUISVILLE

BIOL 102 **Introduction to Biological Systems** **Sample Course Outline** **Panama Program**

Required Textbook:

Essential Biology with Physiology 2nd Ed., Campbell, Neil A., Jane B. Reece, Eric J. Simon 2007. Benjamin/Cummings, 1301 Sansome Street, San Francisco, CA 94111. ISBN: 0-8053-6841-8

Course description and organization:

This three credit hour course, designed for non-Biology majors, will acquaint you with the basic biological principles common to all living organisms. For many, but not all, students, Biology 104 (the companion laboratory course) is also required.

Course objectives:

Upon successful completion of this course, the student should have a basic understanding of:

- The scientific method (true and false hypotheses, theories, variables, controls, experiments);
- Basic chemical principles important to life (atoms, elements, molecules, bonds);
- Cells (cell types, cell structure, cell metabolism: respiration and photosynthesis);
- Basic description of diversity of life on the planet (plants, protists, bacteria, fungi, animals);
- Cell division and its impact on growth, repair and reproduction (mitosis and meiosis);
- Classical genetics and the inheritance of physical traits,
- Gene replication and protein synthesis;
- Evolution: population genetics, forces that cause micro-evolution, speciation
- The interactions between organisms and their environments, population growth, community interactions, and ecosystem function (ecology).

Course Topics:

1 Survey of Biology, Scientific Method, Theory of Evolution

2 Chemistry

3 Organic Molecules, Molecules in Living Systems

4 Cell Structure and Function

Quiz 1

5 Metabolism

6 Respiration

7 Photosynthesis

8 Asexual and Sexual reproduction

9 Patterns of Inheritance, Sex determination

10 Molecular Biology of the Gene

Exam 1

11 Gene Regulation

12 Gene Technology

13 How Populations Evolve

Quiz 2

14 How Biological Diversity Evolves

16 Plants, Fungi & the move onto land

17 Evolution of Animals

18 Ecology of Organisms and Populations

19 Communities and Ecosystems

20 Human Impact on the Environment