

BSCI207: Principles of Biology III – Organismal Biology

Course Description:

BSCI207 explores the narrative of how life arose and diversified on Earth. The course looks at the physical and chemical parameters that made life possible, while constraining organisms to a core set of processes that both unify all life forms and provide the basis for the evolution of incredible biodiversity. This course integrates concepts from multiple disciplines to provide a conceptual framework for understanding the evolution of living systems.

Some faculty members teach this class using a lecture-only format, while others use an active-learning format (lectures and in-class activities).

Prerequisites:

BSCI160 and BSCI161 **AND** BSCI170 and BSCI171.
Must have completed or be concurrently enrolled in CHEM131

Course Credit: 3

Recommended: For Science majors.

Textbook:

Principles of Life by Hillis, Sadava, Hill, and Price (2nd Edition)

Major Topics Covered in BSCI207 Include the Following:

1. Tree thinking and the Tree of Life
2. Origin of Life
3. Diversity of Life and Multicellularity
4. Thermodynamics and Life
5. Biological Implications and Limitations of Scaling
6. Biological Implications of Diffusion and Gradients
7. Information and Entropy
8. Feedback and Homeostasis
9. Transport Systems in Plants and Animals
 - a. Gas Exchange in Animals
 - b. Circulatory Systems
 - c. Nutrient Assimilation
 - d. Osmoregulation
10. Movement and Biomechanics
 - a. Muscle Architecture
 - b. Structure and Skeleton
 - c. Levers and Locomotion
11. Nervous System and Integration
12. Principles of Development: Homeotic Genes