BIO 240: Cell Biology

This course considers the molecular structure of cells, cell energetics, the role of nucleic acids, cell division, and fertilization. The laboratory covers microscopic studies of cells and methods for studying macromolecules and cells. Prerequisite: BIO 121. Three lecture hours and three laboratory hours per week. Instructional Support Fee applies. Gen. Ed. Competencies Met: Scientific Reasoning and Discovery.

Course Student Learning Outcomes

1. Describe the structures and functions of major cellular components (membranes, organelles, and cytoskeleton) with emphasis on their biochemical properties. 2. Explain the fundamental molecular mechanisms involved in DNA replication and repair, and transcription and translation. 3. Describe the biochemical background of cellular energy transformations, and their importance indicators of cellular health. 4. Describe the molecular basis of cell-to-cell communication and its importance in coordinating cellular responses, maturation, and specialization. 5. Describe the stages and regulation of the cell cycle, including checkpoints and control mechanisms, and the role of the cytoskeleton in cell division. 6. Explain the mechanisms of cellular transport, including diffusion, osmosis, active transport, and their role in maintaining cellular homeostasis. 7. Explain the basic events and pathways associated with apoptosis and its relation to the pathogenesis of cancer and degenerative diseases. 8. Apply common experimental cell biology techniques, analyze data, and draw conclusions based on experimental results.
Credits: 4
Program: Biology