

## **NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY BIO 206 - CELL BIOLOGY (4 CR.)**

### **Course Description**

Introduces the ultrastructure and functions of cells. Emphasizes cell metabolism, cell division, and control of gene expression. Lecture 3 hours. Recitation and laboratory 3 hours. Total 6 hours per week.

### **General Course Purpose**

This is a one semester college transfer-level course designed to meet the needs of science majors. This course is an elective course for science majors in their second year of college study following completion of BIO 101 and 102 - "General Biology I & II". This course would also benefit the student in pre-medical, pre-dental, pre-veterinary, and health technologies programs.

### **Course Prerequisites/Corequisites**

Prerequisites are BIO 101, CHM 111 or division approval.

### **Course Objectives**

Upon completion of this course, the student should be able to:

- describe the structures commonly found in eukaryotic and prokaryotic cells
- explain the functions of the cell parts
- describe the chemical composition of cells and their parts
- explain the basic principles of bioenergetics and apply these principles to enzymology and metabolism
- describe both metabolic and genetic regulatory mechanisms in cells
- describe the patterns of growth, reproduction, and heredity in prokaryotic and eukaryotic cells
- explain the differences between generalist and specialized cells
- describe some of the common specialized cell functions
- explain the concept of unity and diversity of cell structure and function

### **Major Topics to be Included**

#### **Lecture**

- Biochemistry
- Cell Structure: eukaryotic and prokaryotic
- Enzymes
- Bioenergetics: photosynthesis and respiration
- Membranes and Transport
- Biosynthesis
- Regulatory Mechanisms
- Growth and Division
- Heredity
- Differentiation
- Specialized Cell Functions, e.g., excitation, motility and contraction, secretion, and immunity

## **Laboratory**

- Microscopy and Staining
- Spectrophotometry
- pH and Buffers
- Cell Fractionation
- Biochemical Extraction and Analysis
- Enzyme Activity and Kinetics
- Aseptic Techniques
- Bacterial Growth Curves
- Cell Permeability and Active Transport
- Photosynthesis
- Cellular Respiration
- Cell and Tissue Culture