FUNDAMENTALS OF BIOLOGY I
COURSE GOALS
DR. SUSAN PETRO

By the end of this course students should be able to:

GENERAL
• Describe the criteria of life.
• Explain the use of scientific inquiry to investigate scientific questions.

CHEMISTRY
• Understand the chemical composition of cells from the subatomic level to the macromolecular level

THE CELL
• Explain the anatomy of the cells and how the component organelles function

METABOLISM
• Explain the function of enzymes in chemical reactions and how enzyme structure is related to enzyme function.
• Describe the major stages of aerobic respiration and fermentation in cells and how energy is harvested from each stage.

CELLULAR REPRODUCTION AND GENETICS
• Explain the cell cycle and both mitosis and meiosis
• Be able to do genetics problems related to several different methods of gene inheritance

EVOLUTION
• Be familiar with the evidence for evolution and how it proceeds both at the population level and at the species level

ORGANISMAL BIOLOGY
• Explain the major differences between the Bacteria, Archaea and Eukaryota domains.
• Understand the life cycles, unique characteristics and phylogeny of the plant, fungus and animals kingdoms

MOLECULAR BIOLOGY
• Explain DNA replication, transcription and translation in eukaryotes.

LABORATORY SKILLS
• Be familiar with the operation of commonly used laboratory equipment e.g. the spectrophotometer, compound and dissecting microscopes, pipettes and various weighing devices.
• Be competent in the mathematical procedures necessary to analyze and present scientific data
• Write a laboratory report.