

# SCIENCE MATHEMATICS AND TECHNOLOGY - BIOLOGY CONCENTRATION - FOR STUDENTS MATRICULATED BEFORE SPRING 2020

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Biology is the study of the structure and function of living systems. Its foci range from the submicroscopic (molecules, organelles) and microscopic (cells) to the macroscopic (organs, organisms, populations). An understanding of the interrelatedness of these increasingly complex levels of organization is essential to the development of a biological perspective.

The study of biology should include:

- An overview of the biological subdisciplines through an introductory survey or a series of studies in those subdisciplines that provides exposure to knowledge at each level of biological organization.
- Laboratory and field experience integrated with theory.
- Studies in chemistry, physics and mathematics, essential for in-depth understanding of biological systems and required for both bachelor's- and advanced-level work in biological sciences.
- Computer literacy.

In developing the concentration, at least one advanced-level study should be included from each of the major areas. Examples of possible studies follow:

- Cellular/molecular biology (cell biology, genetics, microbiology, molecular biology, biochemistry).
- Organismic biology (comparative anatomy, physiology, plant biology, invertebrate zoology, marine biology).
- Population biology (evolution, ecology, epidemiology, animal behavior).

The remaining advanced-level studies in the concentration can be either focused in a single area of biology or distributed among the different areas according to the student's preference.

Studies in different biological subjects often cover the same topics in different context. For example, the mechanism of cell division is addressed in studies of cell biology, genetics, zoology and botany. This overlap is advantageous; repetition allows the student to view the topic from several perspectives. The resultant integration permits the development of an understanding of the functional relatedness of living organisms and demonstrates the unity of the various disciplines within biology.

Finally, the student may wish to include interdisciplinary studies in which biology is considered in a social, ethical and behavioral context and where biology serves to illuminate evolving contemporary concerns such as environmental problems, the AIDS epidemic, genetic engineering, public health, human sexuality and nutrition.