Syllabus: BIO 101 Introduction to Biology

Course number: 101  
Course title: Introduction to Biology  
Number of credits: 4  
Course instructor: Josef Kren; e-mail: josef.kren@doane.edu

Description:

An introductory course in biology utilizing the scientific method in the study of molecular, cellular, organismal, taxonomic, genetic, ecological and evolutionary aspects of life. A weekly laboratory experience emphasizes observation and problem solving.

Biology is the study of living systems. These systems range from the complex biochemistry occurring in individual cells to the magnificence of tropical rainforests with their overpowering stature, brightly colored birds and butterflies and millions of species. In this course, we repeat questions that have been asked for over 2,000 years, but obtain answers with increasing resolution.

We will cover the extent of biology in a single session/term. This is a huge goal that is not possible if we cover everything in depth. Rather, we will examine the general problems and selected examples that can be applied to a variety of other situations.

The laboratory is an integral part of the General Biology experience. It is designed to provide you with a series of experiments and observations to illustrate biological principles discussed in lectures.

Course objectives

After completing the course you should be able to:

- Outline what is biology and the philosophy of biology as a science.
- Outline some of the significant historical events in biological science and name specific scientists.
- Outline the impact of biology on human society.
- Describe some of the methods routinely use for biological investigations.
- Describe the characteristics that distinguish the five kingdoms of life and the major division/phyla that comprise each of these kingdoms.
- Apply major biology concepts into daily lives.

I will present the ‘scientific background’ for each of the covered topics and will expect all of us (the community of active learners) to get involved in discussing the topics. I expect and greatly value critical thinking and discussion. Various movies dealing with biology topics will be shown and discussed.
This is a biology course for non-science majors.

Course policies

Textbook:


Home Assignments:

Most of home assignments will include scientific articles search by using Google Scholar, Academic Search, EBSCO, etc., their critical evaluation and use for preparation of midterm and final papers.

Additional readings:

You will receive copies of scientific and popular articles for additional reading during the term.

Attendance: Students are expected to attend every lecture/field trip during the course. Each class meeting is highly interactive and the learning is impossible to recreate in a make-up assignment. But we understand that, sometimes, life interrupts our plans. In the case of an illness, work requirement, or family emergency, you must contact the teacher or a designated college official to explain your absence. You will be required to complete an additional assignment due the week following the missed class. In the event that you are forced to miss two or more class meetings, special arrangements must be made with the teacher to determine if the requirements for the course can be met.

Grading: Your grade in this course will be based on two papers, class discussion and completion of laboratory exercises. Please note; I value DISCUSSION, and I expect everyone to get involved in discussing various topics related to any part of biology. Your contribution to discussion counts toward your final grade. Your papers are due as described in this syllabus.

Overall performance: 100-96 % = A+
95-93 % = A
92-90 % = A-
89-86 % = B+
85-83 % = B
82-80 % = B-
79-76 % = C+
75-70 % = C
Doane College Academic Integrity Policy:

The Doane College Academic Integrity Policy will be adhered to in this class. All projects and tests will represent your own work. Any use of others’ ideas and words without proper citation of sources is plagiarism and will result in penalties to be determined by the instructor and/or the dean of undergraduate studies.

Schedule of sessions:

Session 1

Biology: Introduction, What is the study of life?

Session 2

Chemistry of life; water and organic molecules. Cells; Origins, cellular organization.

Session 3

Introduction to genetics. Mendelian genetics, chromosomes. Population genetics (how do genes move through time and space). Human genetics.

Session 4

Molecular biology. What is DNA, how is DNA important? Protein synthesis. Biotechnology.

Midterm Paper

Session 5

Biodiversity. Why we have so many different species around? Classification. Paleobiology; Fossils and time.

Session 6

Integrating principles of human physiology.
Session 7

Plant form and function.

Session 8

Behavior and ecology
The future of biology. Biology and social issues.

Final Paper