

Program: Anatomy and Cell Biology

Course Name: Bioinformatics

Course Number:

Course Director: Stephen H. Pilder, Ph.D. Room 606A-MRB. Tel. 2-8996 email.

stephen.pilder@temple.edu

Credits: 3

Semester: Spring, every other year

Times: Meets twice weekly for 1.5 hours

Location: OMS 626

Prerequisites: All students are required to have a basic background in Molecular/Cell Biology/Biochemistry.

Description: The goal of the course is to demonstrate the application of basic computational biological techniques (analysis of sequence information) to modern molecular and proteomic research at the bench. The following broad topics will be explored:

1. How to find genes in the DNA sequences of various organisms.
2. Comparison of different methods used to predict the structure and/or function of newly discovered proteins and structural RNA sequences.
3. Methods used to cluster protein sequences into families of related sequences and the development of protein models.
4. Methodological considerations for aligning similar proteins and generating phylogenetic trees to examine evolutionary relationships and perform mutational analysis.

Students will be divided into small groups, each of which will analyze two given sequences (chosen by the course director and other participating faculty members) during the first and second half of the semester, followed toward the middle and end of the course by a 45-minute *PowerPoint* presentation to the class on each analysis, and a 15-30 minute question and answer session in which each group will defend its choice of methodologies and conclusions.

Outlines & Readings: Outlines for each lecture will be provided by the course director and participating faculty members at the time of the lecture; reading materials will be provided by the course director and participating faculty members one week in advance of each week's lectures, respectively, and will generally include a topical paper or review.

Class attendance is required. Student absence must be excused or will reflect on a student's grade.

The grade in the course will take into account general class participation (25% of grade) and oral presentations (total of 75% of grade).

Office Hours – The Course Director is available during the normal workday by appointment.