

Basic approaches in bioinformatics (introduction).

The course will provide brief introduction into major bioinformatics algorithms and most popular respective software. The major goal – to outline the software potentially useful for students (not only those who will choose bioinformatics as their priority area), provide basic ideas regarding underlying algorithms, and basic training with the software.

Freshman Seminars course by

Ilya Ioshikhes, Ph.D.

Assistant Professor

Department of Biomedical Informatics

(614) 292-8929

Ilya.Ioshikhes@osumc.edu

<http://bmi.osu.edu/personnel/detail.cfm?id=198>

1. Introduction
2. Alignment of pairs of sequences.
3. Practice
4. Multiple sequence alignment
5. Practice
6. Database searching for similar sequences
7. Practice
8. Basic approaches in gene and promoter recognition
9. Practice
10. Bioinformatics of gene regulation – welcome! (General overview and work of our group.)

Grading

Participation/Attendance	40 %
Practice with homework	40 %
Final home project	20 %

Participation:

4% is deducted for each unexcused absence

Practice with homework:

Four classes will provide a practice with programs implementing algorithms explained during the previous lecture. Computer class is required for practices. Students are expected to have basic computer skills (knowledge of word processing and internet use). Each practice will include few assignments that will be explained and started in the classroom and may be completed after the class if needed. Each practice is worth 10%.

Final project:

That will give a variety of practical assignments related to the course topics. The students are expected to work on the project on their computers or in the computer classroom and submit results report to the Instructor. The project is worth 20%.

Recommended literature:

“Bioinformatics. Sequence and Genome Analysis.” By David W. Mount, Cold Spring Harbor Laboratory Press, Cold Spring Harbor NY, or other similar textbook.

Additional readings may be recommended upon request.