Course Outline

1. Document Information

Degree Program	Computer Science
Course Number	CS 438
Course Title	Bioinformatics Algorithms
Semester Hours	3
Course Coordinator	Xiaolan Huang
Revision Term	Spring 2021
Latest Revision	Spring 2021

2. Catalog Description

This course is an introductory course on bioinformatics algorithms and the computational ideas that have driven them. The course includes discussions of different techniques that can be used to solve a large number of practical problems in biology.

3. Textbooks

- Compeau, P. & Pevzner, P.A. (2018). Bioinformatics Algorithms. 3rd Edition. ISBN: 9780990374633.
- Jones, N. C. & Pevzner, P. A. (2004). An Introduction to Bioinformatics Algorithms. MIT Press. ISBN: 9780262101066.

4. References

5. Course Learning Outcomes

- To learn basic concepts in molecular biology.
- To learn the basic algorithms used in bioinformatics applications.

6. Assessment of the Contribution to Student Outcomes

Outcome	1	2	3	4	5	6
Assessed		X				X

7. Prerequisites by Topic

CS 330 with a grade of C or better or graduate standing.

8. Major Topics Covered in the Course

1. Molecular Biology Primer {7 classes}
2. Exhaustive Search {6 classes}
3. Greedy Algorithms {3 classes}
4. Dynamic Programming Algorithms {6 classes}
5. Divide-and-Conquer Algorithms {3 classes}
6. Graph Algorithms {6 classes}
7. Clustering and Trees {6 classes}
8. Randomized Algorithms {3 classes}