

Course Number	CS 438	Course Title	Bioinformatics Algorithms				
Semester Hours	3	Course Coordinator SP20	Xiaolan Huang				
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.						
Textbooks							
SP21							
Compeau, P. & Pevzner, P.A. (2018). <i>Bioinformatics Algorithms</i> . 3 rd Edition. ISBN 9780990374633.							
Jones, N. C. & Pevzner, P. A. (2004). <i>An Introduction to Bioinformatics Algorithms</i> . MIT Press. ISBN: 9780262101066.							
References							
Course Learning Outcomes							
<ul style="list-style-type: none"> • To learn basic concepts in molecular biology. • To learn the basic algorithms used in bioinformatics applications. 							
Assessment of the Contribution to Student Outcomes							
Outcome →	1	2	3	4	5	6	7
Assessed →	X	X	X				
Prerequisites by Topic							
CS 330 with a grade of <i>C</i> or better or graduate standing.							

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}

NOTE: When course is taken as 500-level credit (CS 591 “Special Topics”), there will be additional requirements such as a research project.