

Tentative schedule, Updated weekly; 6 May 2021		
Material	Date	Day
Week 1 Introductions to the course		
Introduction to Course,	24 Feb 2021	W
Purpose and Characteristics,	26	F
Notes: Basic information about the course Overview of Bioinformatics		
Week 2 Even Week		
Careers, DNA Basics	1 March	M
Lab: Software tools	1	M
Central Dogma of Biology	3	W
Replication of DNA	5	F
We discuss the basics to be understood before techniques computer science can be used		
Week 3 Odd Week		
Translation	8	M
Lab: DNA and Python	8	M
Spring break day	10	W
Mutations	12	F
What are mutations in DNA Types and origins		
Week 4 Even Week		
Mutations, Python (bioPython)	15	M
Lab: Fixing the translation and transcription code	15	M
Mutations	17	W
Cystic fibrosis and protein	19	F
How to use BioPython in Bioinformatics Spotting mutations		
Week 5 Odd Week		
Clustalw Alignment	22	M
Lab: Alignment and mutations	22	M
Global and Local Alignment	24	W
Sequence alignment algorithms	26	F
We discuss how alignment works, its algorithms and we use this knowledge to determine how to track influenza (and Covid-19)		
Week 6 Even Week		
Tracking Influenza	29	M
Lab: Alignment, algorithms and analysis	29	M
Horizontal Gene Transfer and Blast analysis	31	W
More on Blast analysis at NCBI	2 April	F
We discuss how to use Blast to search		

	for sequence fragments across all known sequences to determine origins and identify		
Week 7	Odd Week		
	Protein Alignment and Substitution Matrices	5	M
	Lab: Speaker	5	M
	Protein Alignment and Substitution Matrices	7	W
	Protein Alignment and Substitution Matrices	9	F
	We discuss how to align protein using blast and the cover substitution matrices		
Week 8	Even Week		
	Exam 1 given out	12	M
	Spring break day	12	M
	Sequence assembly algorithms	14	W
	Sequence assembly algorithms	16	F
	We discuss how DNA data is procured from genetic molecular information.		
Week 9	Odd Week		
	Gene Prediction	19	M
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	Gene Prediction Algorithms	21	W
	Open Reading Frames	23	F
	We discuss how genes are recognized in the midst of DNA sequence material. We discuss landmarks and other signals to imply the whereabouts of genes.		
Week 10	Even Week		
	protein folding	26	M
	Speaker: Dr. Kate Cooper	26	M
	protein folding tools	28	W
	Discussion of project	30	F
	We discuss protein folding, conformations and three main tools that are used to ascertain the physical structure of proteins.		
Week 11	Odd Week		
	Protein domains	3 May	M
	No lab	3	M
	Exam 2 given out. 24 hours to complete	5	W
	Finishing protein domains	7	F
Week 12	Even Week		
	project presentations (class)	10	M
	Speaker: Dr. Tom Helikar (lab)	10	M

project presentations (class)
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12
14

W
F