Project	Week	Date	Module	Topic
Describe your previous research, areas of research interest in bioinformatics / computational-biology, type of project that best fits your interests. Post this description in a profile that lets your classmates know you. **Project profile due Wed, Jan 16**.	Week 01	Mon, Jan 07	Introduction & Overview	Course overview
		Wed, Jan 09		Getting started in computational biology
		Fri, Jan 11		Brush up: Probability, Statistics, etc.
	Week 02	Mon, Jan 14	Genome assembly, alignment, & annotation	de Bruijin graphs; Suffix trees
		Wed, Jan 16		Hidden Markov models
		Fri, Jan 18		Paper discussion
Discuss with Arjun (and any other PI) and read recent papers. Briefly describe project ideas. **Project topic due Fri, Feb 01**.	Week 03	Mon, Jan 21	No Class; Need an extra class (or two 30-minute slots) to compensate	
		Wed, Jan 23	Sequence alignment & pattern finding	Dynamic programming
		Fri, Jan 25		Substitution matrices; BLAST; Paper discussion
	Week 04	Mon, Jan 28	Comparative genomics; Phylogenomics	Molecular evolution
		Wed, Jan 30		Tree construction
		Fri, Feb 01		Paper discussion
Prepare a two-page pre-proposal (Page1: text; Page2: figures & references). **Project pre-proposal due Wed, Fri 08**.	Week 05	Mon, Feb 04	Genetic variation & quantitative genetics	LD, GWAS, Regularized linear regression
		Wed, Feb 06		Statistical inference, Multiple hypothesis testing
		Fri, Feb 08		Paper discussion
Write 5-page proposal describing project goals, division of work, milestones, datasets, and challenges. **Project proposal due Wed, Feb 20**.	Week 06	Mon, Feb 11	Regulatory genomics	Gibbs sampling
		Wed, Feb 13		Expectation-Maximization
		Fri, Feb 15		Paper discussion
	Week 07	Mon, Feb 18	Functional genomics	Differential expression; Functional enrichment analysis
		Wed, Feb 20		Clustering; Intro to machine learning
		Fri, Feb 22		Paper discussion
Review proposals. Discuss proposal with Arjun. **Reviews due Fri, Mar 01**.	Week 08	Mon, Feb 25	Primers – Part 1	Data wrangling & visualization in R/Python – Part 1
		Wed, Feb 27		Data wrangling & visualization in R/Python – Part 2
		Fri, Mar 01		Exploratory data analysis
Address peer evaluations, revise aims, scope, list of final goals & deliverables. Meet with Arjun. **Response is due 3 days after mid-course presentation**.	Week 09	Mon, Mar 04	Spring Break	
		Wed, Mar 06		
		Fri, Mar 08		
	Week 10	Mon, Mar 11	Mid-course project presentations	Lightning talks
		Wed, Mar 13		
		Fri, Mar 15		
Continue making substantial progress on proposed milestones. Write the first-draft of final report. Meet Arjun to discuss all results and get feedback on the draft. **Mid-course project report due Fri, Mar 29**.	Week 11	Mon, Mar 18	Primers – Part 2	Machine learning
		Wed, Mar 20		Deep learning
		Fri, Mar 22		ML/DL Applications
	Week 12	Mon, Mar 25	Single-cell genomics	Missing value imputaion; Dimensionality reduction
		Wed, Mar 27		Trajectory inference; Spatial reconstruction
		Fri, Mar 29		Paper discussion
Complete milestones, finalize results, figures, write-up in conference publication format. As part of the report, comment on your overall project experience. **Final project report due Fri, Apr 26**.	Week 13	Mon, Apr 01	Molecular dynamics; Protein structure prediction	Molecular simulation
		Wed, Apr 03		Maximum entropy modeling
		Fri, Apr 05		Paper discussion
	Week 14	Mon, Apr 08	Modeling cellular pathways; Digital evolution	Dynamical simulation, State Space, Bifurcation
		Wed, Apr 10		Linear programming; Artificial life
		Fri, Apr 12		Paper discussion
	Week 15	Mon, Apr 15	Biological networks	Measuring associations; Network inference
		Wed, Apr 17		Graph theory, Label propagation
		Fri, Apr 19		Paper discussion
	Week 16	Mon, Apr 22	Cancer genomics	Overview
		Wed, Apr 24	Genome engineering	Overview
		Fri, Apr 26	Personal genomics	Overview
Final exams	Week 17	Mon, Apr 29	Final project presentations	One of these days: Lightning talks & Poster presentations
		Wed, May 01		
		Fri, May 03		