DATE	DAY	Instructor	TOPIC	Readings	In Class Quizzes	DUE AT THE START OF CLASS
Aug. 21	T	Hurwitz	Welcome; overview; introduction to metagenomics, protocols.io	N/A		
Aug. 23	Th	U'Ren	Concepts in environmental 'omics		Quiz 1	
Aug. 28	T	U'Ren	Experimental design, reproducibility, and bias		Quiz 2	
Aug. 30	Th	Guest lecture: Watts	Next-generation sequencing technology			
Sept 4	T	Hurwitz	Cyberinfrastructure, iMicrobe, CyVerse; Projects discussion		Quiz 3	
Sept 6	Th	U'Ren	Unix, usearch, 16S data quality control		Quiz 4	**HW1:** Paper summary
Sept 11	T	U'Ren	More 16S analyses (in class debate)		Quiz 5	
Sept 13	Th	U'Ren	Community ecology analyses (clustering, phylogenetics)		Quiz 6	**HW2:** Project letter of intent
Sept 18	T	U'Ren	Hands on R studio visualization		Quiz 7	
Sept 20	Th	Hurwitz	Intro to big databases		Quiz 8	**HW3**: 16S methods & results write-up
Sept 25	T	U'Ren	WGS library prep, sequence quality control, sequencing depth normalization, contamination screening		Quiz 9	
Sept 27	Th	U'Ren	Practical on quality control and remove contamination; visualizing sequencing depth		Quiz 10	**HW4**: 16S discussion write-up
Oct 2	T	Hurwitz	Read based analysis, comparative metagenomics, introduction to k-mer analytics		Quiz 11	
Oct 4	Th	Hurwitz	Practical on comparative metagenomics: Mash, Libra, Commet		Quiz 12	**HW5**: QC methods & results write-up
Oct 9	T	Hurwitz	Introduction to assembly, differences b/w de novo and reference-based assembly, overlap vs de brujin		Quiz 13	
Oct 11	Th	Hurwitz	Creating an assembly, using different assemblers, assessing the quality of the assembly		Quiz 14	**HW6**: Comparative metagenomics methods & results write-up
Oct 16	T	Hurwitz	Co-assembly, population genomes, and alignment to contigs		Quiz 15	
Oct 18	Th	Hurwitz	Reflection on the bias of read-based mapping (microbes in the human genome)		Quiz 16	**HW7**: WGS assembly methods & results write-up
Oct 23	T	Hurwitz	Gene callers and functional annotation		Quiz 17	
Oct 25	Th	Hurwitz	Metabolic analysis		Quiz 18	**HW8:** WGS co-assembly methods & results write-up
Oct 30	T	U'Ren	Practical on gene callers and functional annotation			
Nov 1	Th	U'Ren	Practical on metabolic analysis			
Nov 6	T	U'Ren	Multi-omics analyses		Quiz 19	
Nov 8	Th	U'Ren	Practical on RNAseq		Quiz 20	**HW9:** WGS functional annotation methods & results write-up
Nov 13	T	Hurwitz	Scaling it up! Big data (machine learning, noisy data, parallelization)			**HW10:** WGS metabolic methods & results write-up
Nov 15	Th	Hurwitz	What is the HPC? Field trip!			
Nov 20	T	Hurwitz/U'Ren	Project Q&A; results & conclusions			
Nov 22	Th		THANKSGIVING BREAK; NO CLASS			
Nov 27	T	U'Ren	Journal club presentations			
Nov 29	Th	U'Ren	Journal club presentations			
Dec 4	T	Hurwitz/U'Ren	Journal club presentations and course wrap-up			*FINAL PROJECT DUE*

*Topics and deadlines are subject to change, please reference the class schedule and D2L regularly for updates